7Y-9-1

COLUMBIA RIVER BRIDGE ASTORIA ORE.-PT. ELLICE WASH. US 101 CLATSOP COUNTY ORE.—PACIFIC COUNTY WASH.				SHEET No. 1
FED. ROAD Div. No.	STATE	PROJECT NUMBER	FISCAL YEAR	TOTAL SHEETS
8	OREGON	U-F003-1(14)		See Index

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
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2	Summary

Drg Nos 17601-17655 Incl
14660, 17368 & 17190

STATE OF OREGON
STATE HIGHWAY DEPARTMENT

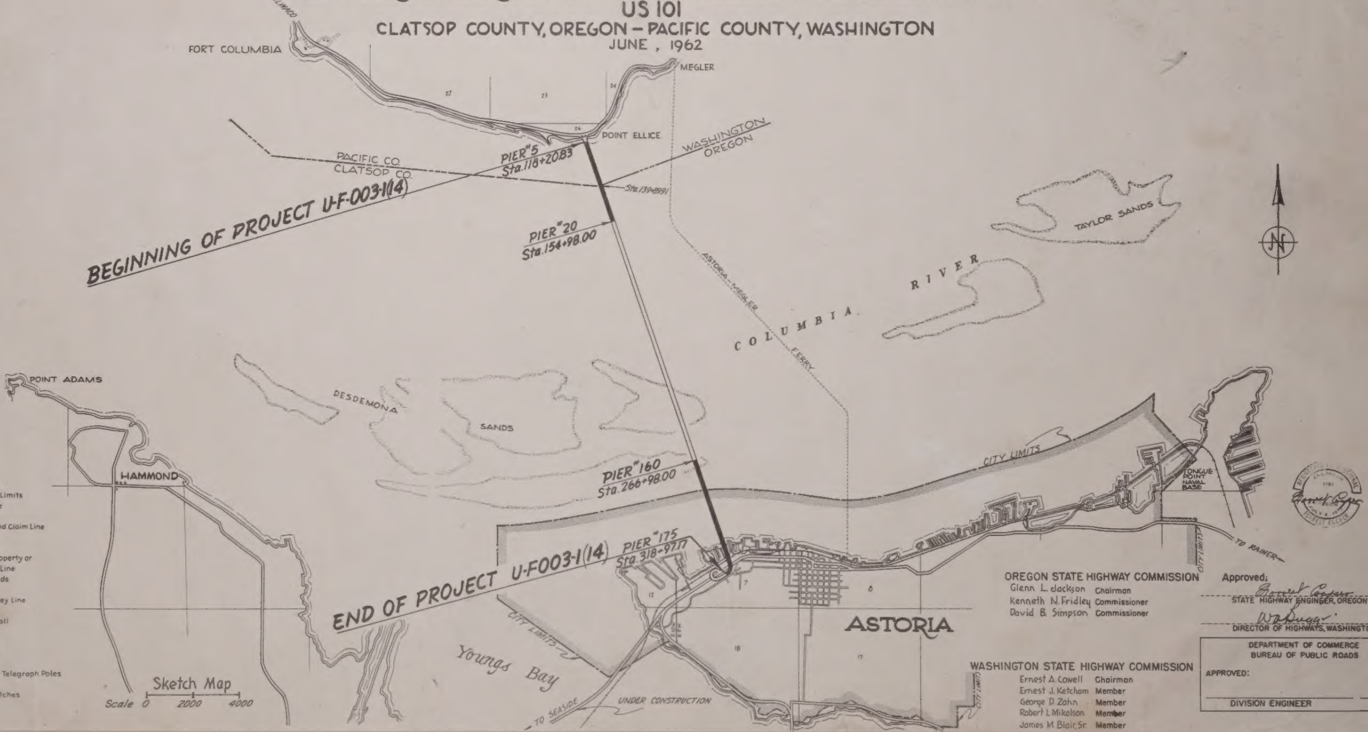
PLANS FOR PROPOSED PROJECT
SUB STRUCTURE FOR STEEL SPANS

COLUMBIA RIVER BRIDGE
ASTORIA OREGON-PT. ELLICE WASHINGTON

US 101

CLATSOP COUNTY, OREGON – PACIFIC COUNTY, WASHINGTON

JUNE, 1962



CONVENTIONAL SIGNS

- State Line
- County Line
- City or Town Limits
- Township Line
- Section Line
- Donation Land Claim Line
- Fence Line
- Guard Rail
- Unfenced Property or Right of Way Line
- Existing Roads
- Trails
- Base or Survey Line
- Railroads
- Retaining Wall
- Culverts
- Drop Inlet
- Trolley Pole
- Power Pole
- Telephone or Telegraph Poles
- Marsh
- Irrigation Ditches
- Bridges
- Trees

OREGON STATE HIGHWAY COMMISSION

Glenn L. Jackson	Chairman
Kenneth N. Fridley	Commissioner
David B. Simpson	Commissioner

WASHINGTON STATE HIGHWAY COMMISSION

Ernest A. Cowell	Chairman
Ernest J. Ketcham	Member
George D. Zahn	Member
Robert L. Mikolson	Member
James M. Blair, Sr.	Member

Approved;

Forrest Cooper
STATE HIGHWAY ENGINEER, OREGON

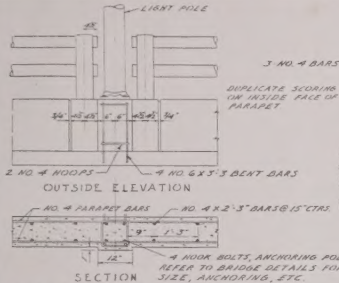
W. A. Bugge
DIRECTOR OF HIGHWAYS, WASHINGTON

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DIVISION ENGINEER ________ DATE ________

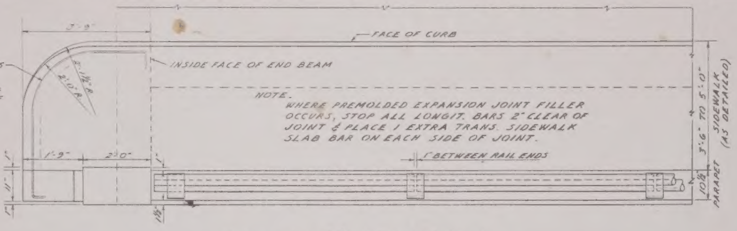
89-166·1


LIGHT POLE
DUPLICATE SCORING ON INSIDE FACE OF PARAPET
2 NO. 4 HOOPS
4 NO. 6 X 3'-3 BENT BARS
NO. 4 PARAPET BARS
NO. 4 X 2'-3" BARS @ 15" CTRS.
4 HOOK BOLTS, ANCHORING POLE
REFER TO BRIDGE DETAILS FOR POLE SIZE, ANCHORING, ETC.
3/4" 4½" 4½" 6" 6" 4½" 4½" 3/4"
9" 1'-3" 12"

OUTSIDE ELEVATION

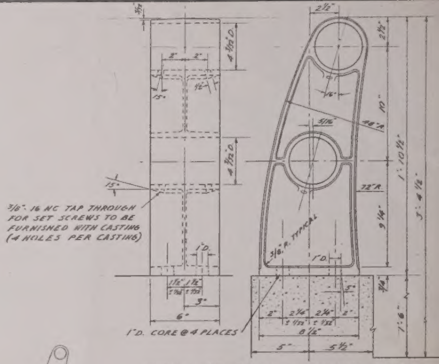
SECTION

TYPICAL DETAIL FOR LIGHT POLE
SCALE 3/4" = 1'-0"

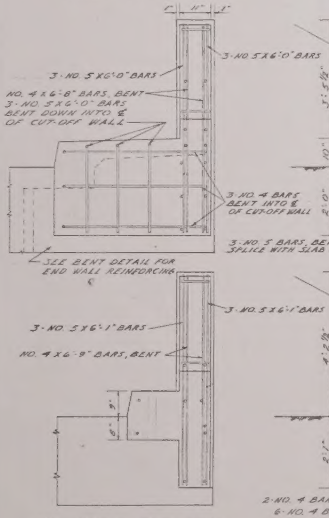


NOTE.
WHERE PREMOLDED EXPANSION JOINT FILLER OCCURS, STOP ALL LONGIT. BARS 2" CLEAR OF JOINT & PLACE 1 EXTRA TRANS. SIDEWALK SLAB BAR ON EACH SIDE OF JOINT.

PLAN - RAIL "A" - WITH SIDEWALK
SCALE 3/4" = 1'-0"

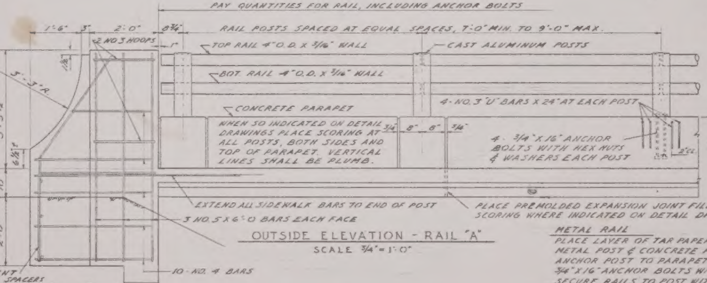


DETAIL OF CAST ALUMINUM POST
SCALE 3" = 1'-0"



END VIEW OF END POSTS
SCALE 3/4" = 1'-0"

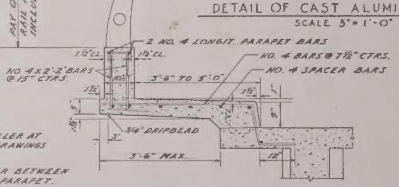
NOTE.
TOP OF END POSTS SHALL PARALLEL GRADE & END FACES SHALL BE PLUMB. METAL RAIL POSTS TO BE PERPENDICULAR TO GRADE.


PAY QUANTITIES FOR RAIL, INCLUDING ANCHOR BOLTS
RAIL POSTS SPACED AT EQUAL SPACES, 7'-0" MIN. TO 9'-0" MAX.
1'-6" 3" 2'-0" 8¾"
2 NO 3 HOOPS
TOP RAIL 4" O.D. X 3/16" WALL
BOT. RAIL 4" O.D. X 3/16" WALL
CAST ALUMINUM POSTS
CONCRETE PARAPET
4-NO. 3 "U" BARS X 24" AT EACH POST
4 - 3/4" X 16" ANCHOR BOLTS WITH HEX NUTS & WASHERS EACH POST
3'-3" R
3'-5½"
EXTEND ALL SIDEWALK BARS TO END OF POST
3 NO. 5 X 6'-0 BARS EACH FACE
PLACE PREMOLDED EXPANSION JOINT FILLER AT SCORING WHERE INDICATED ON DETAIL DRAWINGS
3-NO. 5 BARS, BENT SPLICE WITH SLAB SPACERS
10-NO. 4 BARS
PAY QUANTITIES FOR RAIL ABOVE THIS LINE INCLUDING ANCHOR BOLTS

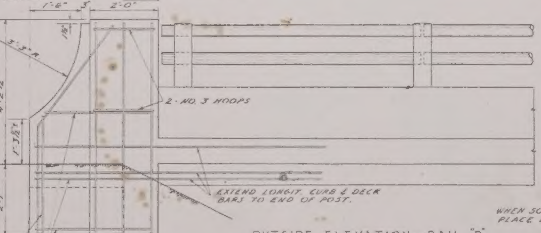
WHEN SO INDICATED ON DETAIL DRAWINGS PLACE SCORING AT ALL POSTS, BOTH SIDES AND TOP OF PARAPET. VERTICAL LINES SHALL BE PLUMB.

OUTSIDE ELEVATION - RAIL "A"
SCALE 3/4" = 1'-0"

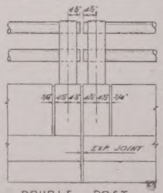
METAL RAIL
PLACE LAYER OF TAR PAPER BETWEEN METAL POST & CONCRETE PARAPET. ANCHOR POST TO PARAPET WITH 4-3/4" X 16" ANCHOR BOLTS WITH HEX NUTS. SECURE RAILS TO POST WITH 3/8" SET SCREWS.



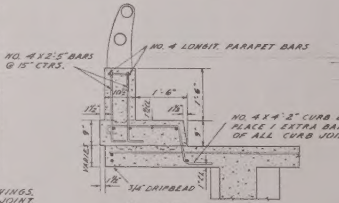
SECTION - RAIL "A"
(WITH SIDEWALK)
SCALE 3/4" = 1'-0"



OUTSIDE ELEVATION - RAIL "B"
SCALE 3/4" = 1'-0"

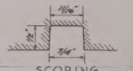


DOUBLE POST
WHEN SO INDICATED ON DETAIL DRAWINGS, PLACE DOUBLE POST AT EXPANSION JOINT.

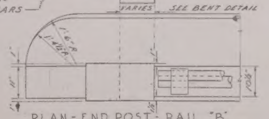


NO. 4 X 4'-2" CURB BARS @ 15" CTRS. PLACE 1 EXTRA BAR EACH SIDE OF ALL CURB JOINTS.

SECTION - RAIL "B"
(WITHOUT SIDEWALK)
SCALE 3/4" = 1'-0"



SCORING
SCALE - FULL SIZE



PLAN - END POST - RAIL "B"
SCALE 3/4" = 1'-0"

GENERAL NOTES -
THIS DETAIL IS INTENDED FOR ALUMINUM OR STEEL RAIL ALTERNATES.
DETAILS SHOWN ARE FOR ALUMINUM RAIL & CAST ALUMINUM RAIL POSTS.
FOR STEEL ALTERNATE USE 3½" STANDARD STEEL PIPE (O.D. = 4.00") & CAST STEEL POSTS PER DETAIL WITH STEEL BOLTS, NUTS, WASHERS & SET SCREWS.
ALL STEEL RAIL MEMBERS SHALL BE GALVANIZED.

DETAILS NOT OTHERWISE SHOWN ARE SAME FOR RAILS "A" & "B"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0".
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER

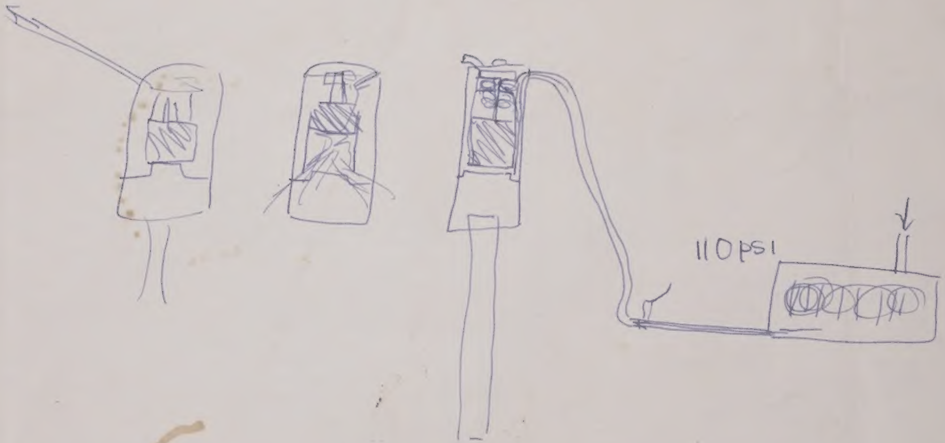
DESIGNED
DRAWN HLS
CHECKED
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

STANDARD
2 PIPE PARAPET HANDRAIL

WITH OR WITHOUT SIDEWALK

DATE 2-2-62
SHEET 1 OF 1
BRIDGE NO.
DRAWING NO. 17368


110 PSI

S U M M A R Y

	ITEM	UNIT	NET QUANT	ALLOW	TOTAL
SCHEDULE 1A *Pier 5, Alternate "A"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*256*	*44*	*300*
	" " Below Elevations Shown	*" "*		*20*	*20*
	Tremie Concrete	*" "*	*543*	*37*	*580*
	Class "A" Concrete	*" "*	*486*	*34*	*520*
	Metal Reinforcemet	*lb.*	*47,700*	*2,300*	*50,000*
SCHEDULE 1B *Pier 5, Alternate "B"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*231*	*19*	*250*
	" " Below Elevations Shown	*" "*		*20*	*20*
	Seal Concrete	*" "*	*805*	*45*	*850*
	Class "A" Concrete	*" "*	*548*	*52*	*600*
	Metal Reinforcement	*Lb.*	*41,000*	*3,000*	*44,000*
SCHEDULE 2A *Pier 6 Through 12 Alternate "A"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*10,235*	*765*	*11,000*
	" " Below Elevations Shown	*" "*		*600*	*600*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*50,900*		*50,900*
	Drive Prestressed Piling	*One*	*1,018*		*1,018*
	Tremie Concrete	*Cu. Yd.*	*12,319*	*681*	*13,000*
	Class "A" Concrete	*" "*	*5,122*	*278*	*5,400*
	Metal Reinforcement	*Lb.*	*767,600*	*32,400*	*800,000*
SCHEDULE 2B *Piers 6 Through 12 Alternate "B"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*8,942*	*658*	*9,600*
	" " Below Elevations Shown	*" "*		*500*	*500*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*38,050*		*38,050*
	Drive Prestressed Piles	*One*	*761*		*761*
	Seal Concrete	*Cu. Yd.*	*10,794*	*706*	*11,500*
	Class "A" Concrete	*" "*	*8,498*	*502*	*9,000*
	Metal Reinforcement	*Lb.*	*895,900*	*54,100*	*950,000*
SCHEDULE 3A *Piers 13 Through 20, Alternate "A"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd*	*4,720*	*270*	*5,000*
	" " Below Elevations Shown	*" "*		*300*	*300*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*14,700*		*14,700*
	Drive Prestressed Piles	*One*	*294*		*294*
	Tremie Concrete	*Cu. Yd.*	*3,476*	*224*	*3,700*
	Class "A" Concrete	*" "*	*2,130*	*170*	*2,300*
	Metal Reinforcement	*Lb.*	*546,800*	*33,200*	*580,000*
	Load Test Prestressed Pile	*One*	*/*		*/*
SCHEDULE 3B *Piers 13 Through 20, Alternate "B"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*2,728*	*272*	*3,000*
	" " Below Elevations Shown	*" "*		*200*	*200*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*14,200*		*14,200*
	Drive Prestressed Piles	*One*	*284*		*284*
	Seal Concrete	*Cu. Yd.*	*2,705*	*195*	*2,900*
	Class "A" Concrete	*" "*	*2,622*	*178*	*2,800*
	Metal Reinforcement	*Lb.*	*410,000*	*20,000*	*430,000*
	Load Test Prestressed Pile	*One*	*/*		*/*
SCHEDULE 4A *Piers 160 Through 167, Alternate "A"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*8,620*	*380*	*9,000*
	" " Below Elevations Shown	*" "*		*500*	*500*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*6,800*		*6,800*
	Furnish Timber Piling	*" "*	*41,600*		*41,600*
	Drive Prestressed Piles	*One*	*136*		*136*
	Drive Timber Piles	*"*	*640*		*640*
	Tremie Concrete	*Cu. Yd.*	*8,127*	*473*	*8,600*
	Class "A" Concrete	*" "*	*4,606*	*394*	*5,000*
	Metal Reinforcement	*Lb.*	*975,200*	*74,800*	*1,050,000*
	Load Test Timber Pile	*One*	*/*		*/*
SCHEDULE 4B *Piers 160 Through 167, Alternate "B"*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*6,882*	*418*	*7,300*
	" " Below Elevations Shown	*" "*		*400*	*400*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*7,400*		*7,400*
	Furnish Timber Piling	*" "*	*36,725*		*36,725*
	Drive Prestressed Piles	*One*	*148*		*148*
	Drive Timber Piles	*"*	*565*		*565*
	Seal Concrete	*Cu. Yd.*	*5,302*	*298*	*5,600*
	Class "A" Concrete	*" "*	*6,328*	*372*	*6,700*
	Metal Reinforcement	*Lb.*	*956,400*	*43,600*	*1,000,000*
	Load Test Timber Pile	*One*	*/*		*/*
SCHEDULE 5 *Piers 168 Through 171*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*18,380*	*1,620*	*20,000*
	" " Below Elevation Shown	*" "*		*1,000*	*1,000*
	Furnish 14-inch Prestressed Piling	*Lin. Ft.*	*4,096*		*4,096*
	Furnish Timber Piling	*" "*	*16,120*		*16,120*
	Furnish Treated Timber Piling	*" "*	*76,370*		*76,370*
	Furnish 14 BP 73 Steel Piling	*" "*	*145,200*		*145,200*
	Drive Prestressed Piles	*One*	*128*		*128*
	Drive Timber Piles	*"*	*248*		*248*
	Drive Treated Timber Piles	*"*	*758*		*758*
	Drive Steel Piles	*"*	*1,056*		*1,056*
	Splice Steel Piles	*"*		*250*	*250*
	Seal Concrete	*Cu. Yd.*	*10,580*	*420*	*11,000*
	Class "A" Concrete	*" "*	*16,197*	*803*	*17,000*
	Metal Reinforcement	*" "*	*2,305,100*	*194,900*	*2,500,000*
	Structural Steel	*All*	*All*		*All*
	Treated Timber in Place	*M-FBM*	*412*	*28*	*440*
SCHEDULE 6 *Piers 172 Though 175 and Spans 172, 173 and 174*	*Shoring, Cribbing, etc.*	*All*	*All*		*All*
	Structural Excavation	*Cu. Yd.*	*1,701*	*99*	*1,800*
	" " Below Elevation Shown	*" "*		*100*	*100*
	Furnish 10 BP 42 Steel Piling	*Lin. Ft.*	*6,405*		*6,405*
	Drive Steel Piles	*One*	*224*		*224*
	Splice Steel Piles	*"*		*20*	*20*
	Class "A" Concrete	*Cu. Yd.*	*4,153*	*247*	*4,400*
	Metal Reinforcement		*867,100*	*32,900*	*900,000*
	Metal Parapet Railing	*Lin. Ft.*	*814*	*6*	*820*

COLUMBIA RIVER BRIDGE
ASTORIA OREGON-PT. ELLICE WASH.
U.S. 101
CLATSOP COUNTY OREGON - PACIFIC COUNTY WASH.

FED. ROAD Div. No.	STATE	PROJECT NUMBER	FISCAL YEAR	SHEET No.	TOTAL SHEETS
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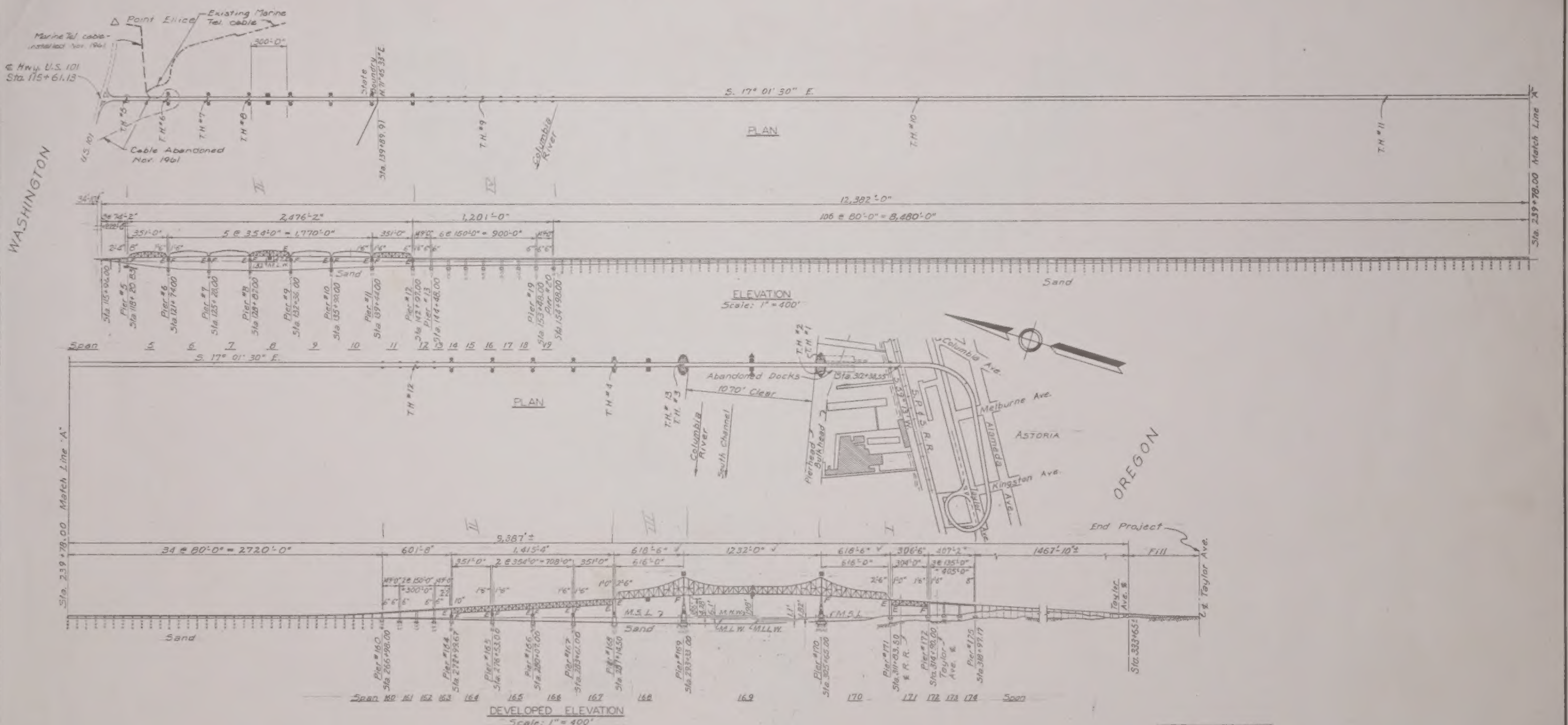

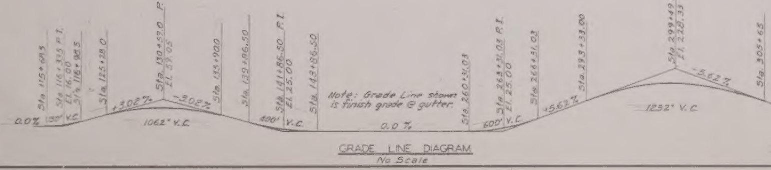

GRADE LINE DIAGRAM
No Scale

Navigation Light Legend:
● - 180° Red Navigation light
■ - 360° Green Navigation light
▲ - 3 - 180° White Navigation lights (Main Channel Marker)
(Permanent navigation lights installed by others.)
■ - Aircraft Beacon

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0".
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

APPROVED: Ivan Merchant BRIDGE ENGINEER P. M. Stephenson ASST. STATE HIGHWAY ENGINEER Forrest Cooper STATE HIGHWAY ENGINEER	OREGON STATE HIGHWAY DEPARTMENT BRIDGE DIVISION COLUMBIA RIVER BRIDGE ASTORIA, OREGON - PT. ELLICE, WASH. U. S. HIGHWAY 101 CLATSOP CO., ORE. PACIFIC CO., WASH. PLAN & ELEVATION
DESIGNED ...... CHECKED ...... DRAWN M.K. CALC. BOOK	DATE 8-23-1961 BRIDGE NO. 7949 ACCOMPANIED BY DWGS. 17602 - 17655, 14660, 17368, 17190 SHEET 1 OF 58 DRAWING NO. 17601

APR 2 1962

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GENERAL NOTES:

Bridge designed for H20-S16-44 loading without allowing for future wearing surface. Box girder dead loads are assumed to be equally distributed to all longitudinal beams. Box girder live loads are assumed to be distributed to longitudinal beams according to Division I, Section 3, Page 1 and 2 of the Oregon State Highway Department "Specifications For Highway Bridges."

Concrete in precast-prestressed concrete piling shall be class AA and shall attain a breaking strength of 5000 psi in 28 days and shall attain a breaking strength of 4000 psi at transfer of prestressing force. See Drawing No. 17190. All concrete in superstructure shall be Class A and shall attain a breaking strength of 4000 psi in 28 days (f_c = 1600 psi). All other concrete shall be Class A and shall attain a breaking strength of 3,300 psi in 28 days (f_c = 1,320 psi). The rate of tremie concrete pour shall be regulated to prevent uplift and excessive stresses in the precast shells. All precast shells shall be handled in such a manner as to prevent excessive stresses.

All reinforcing steel shall be intermediate grade deformed bars. Bars from number 3 to number 11, inclusive, shall conform to ASTM Specification A-305 and shall be lapped 20 diameters at all splices unless noted or shown otherwise. Number 14 bars shall conform to ASTM Specification A-4-8 and shall be lapped 35 diameters at all splices unless noted or shown otherwise. All bars in superstructure shall be placed 2" clear of nearest face of concrete unless noted or shown otherwise. All bars in substructure below elevation +12.0 in Piers #5 thru #20 and #160 thru #171 shall be 4" clear of nearest face of concrete unless shown or noted otherwise. All other bars in substructure shall be 3" clear of nearest face of concrete unless noted or shown otherwise. (f_s = 20,000 psi).

All prestressing wire shall be seven-wire stress relieved strand conforming to ASTM Specification A-416-57.

Stress steel bars in Piers 169 and 170 shall be high-tensile-strength alloy bars and shall conform to specifications as set forth in the Special Provisions (f_y = 140,000 psi).

All structural and miscellaneous steel shall conform to ASTM specification shown on the detail drawings unless noted otherwise.

Column steel that will vary with footing elevations shall not be fabricated until final footing elevations are determined in the field.

All materials and workmanship shall conform to the specifications for bridges of the OREGON STATE HIGHWAY COMMISSION.

DATE	REVISION

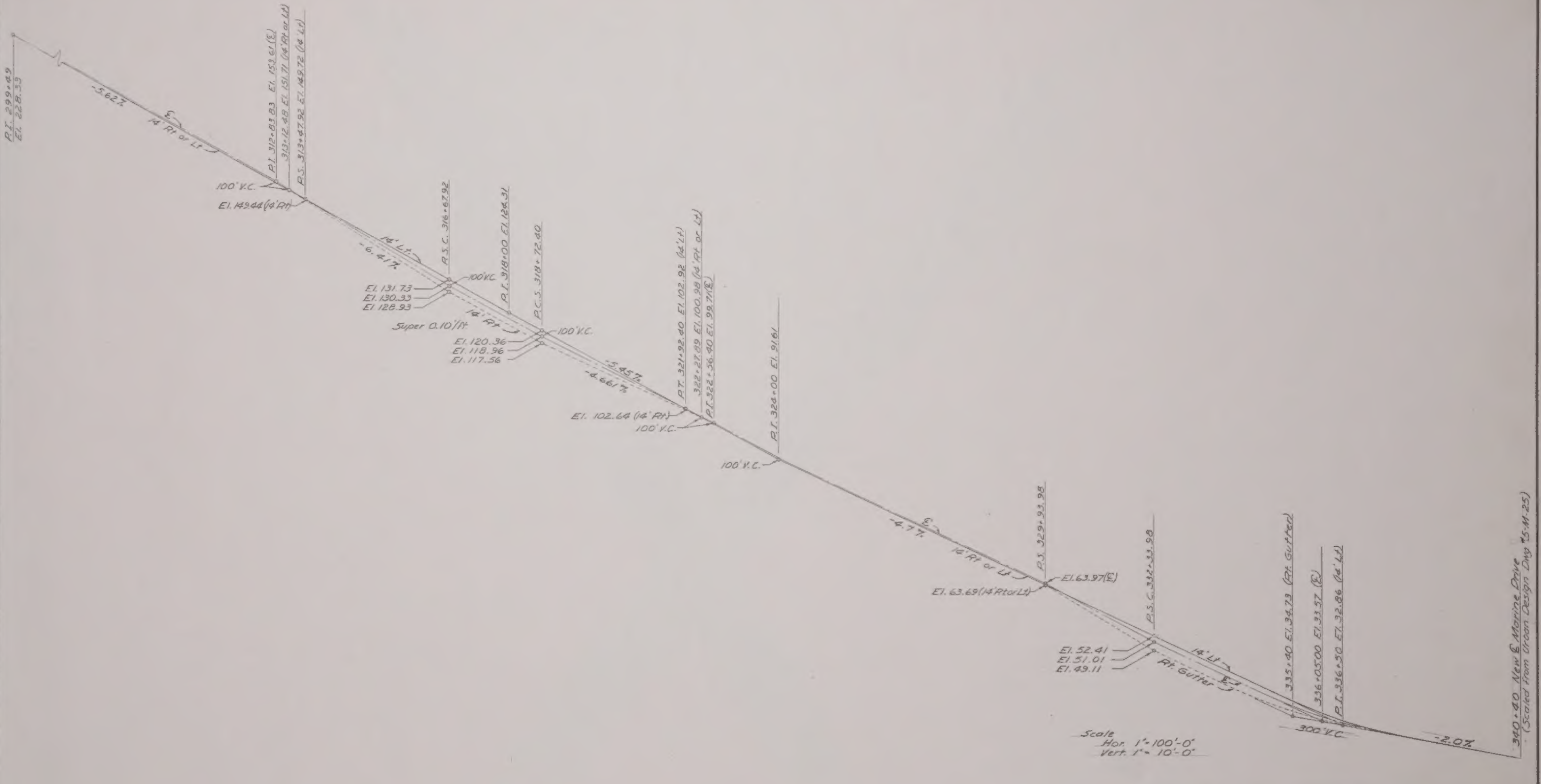
APPROVED: Ivan D Merchant
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN J.M.T.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

INDEX SHEET
DATE 2-26-62
SHEET 2 OF 58
BRIDGE NO. 7949
DRAWING NO. 17602

APR 2 1962
MAR 5 1962



ADVERTISED FOR BIDS APR 2 1962
MAR 5 1962

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

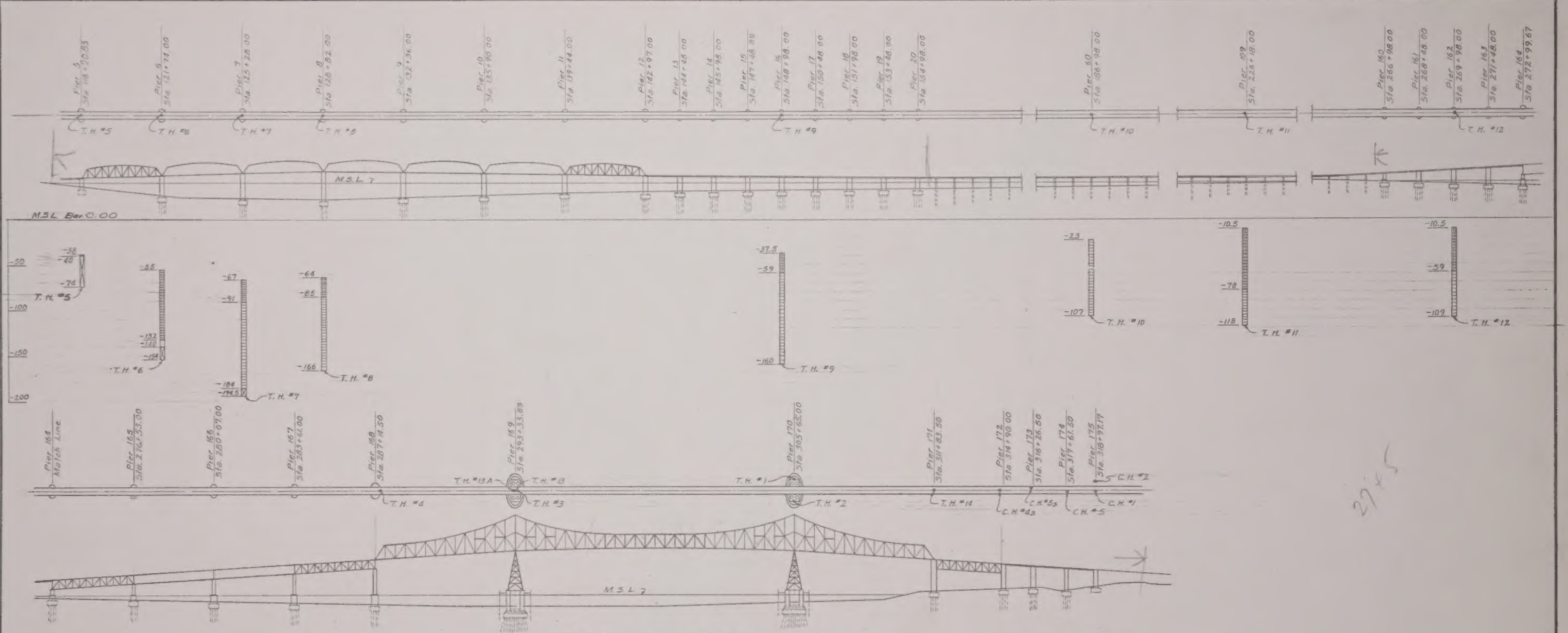
APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED ——
CHECKED
DRAWN J.M.T.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

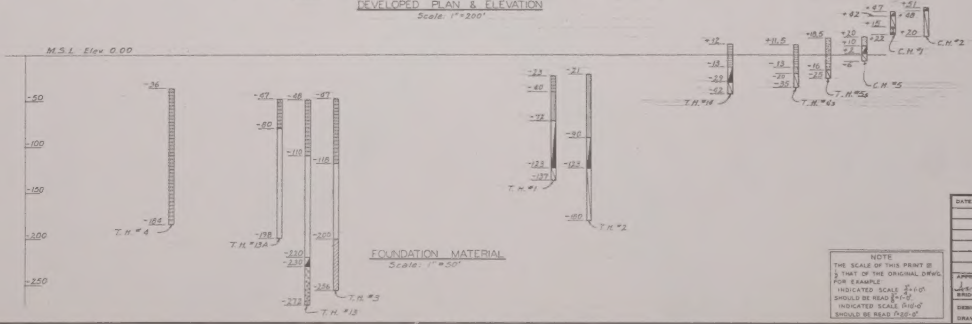
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

GRADE LINE DIAGRAM

DATE 2-27-62
SHEET 3 OF 58
BRIDGE NO. 7949
DRAWING NO. 17603



DEVELOPED PLAN & ELEVATION
Scale: 1" = 200'



FOUNDATION MATERIAL
Scale: 1" = 50'

Foundation Material

▨ Fill
■ Mud
▤ Sand
▥ Silty Clay
▦ Sand & Silt Strata
☐ Silt Loam
▧ Clay with Sand
◪ Clay
▦ Stoney Loam
⧄ Shale - Soft
☒ Rock
⧗ Sandstone

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0".
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER

DESIGNED
CHECKED
DRAWN M.K.
CALC. BOOK 662

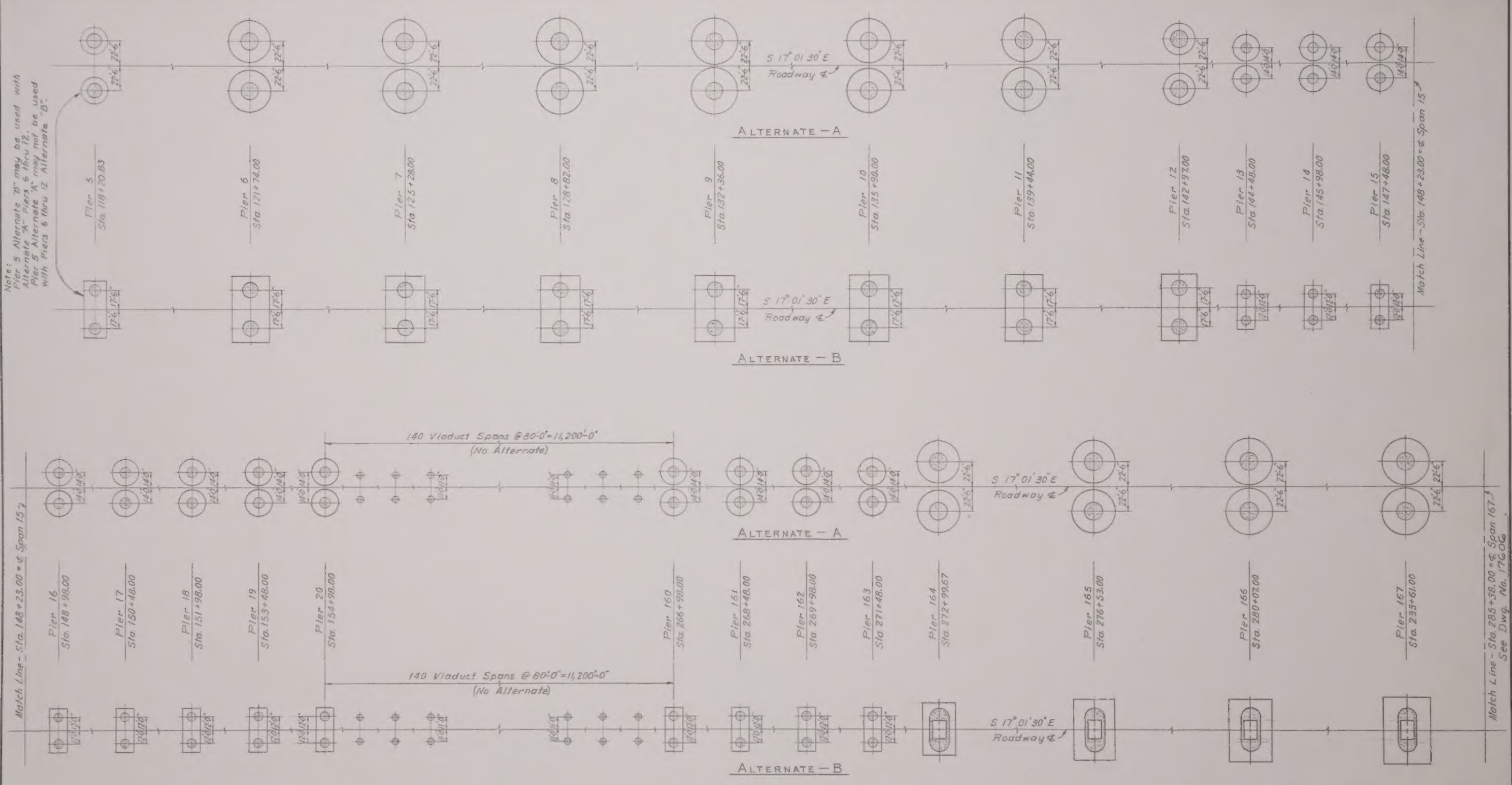
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FOUNDATION DATA

DATE FEB. 23, 1962
SHEET 4 OF 58
BRIDGE NO. 7949
DRAWING NO. 17604

APR 2 1962



Note: Pier 5 Alternate "B" may be used with Alternate "A" Piers 6 thru 12. Pier 5 Alternate "A" may not be used with Piers 6 thru 12 Alternate "B".

PART FOOTING PLAN

Scale 1" = 40'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRW'G
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0".
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER

DESIGNED ____ CHECKED ____
DRAWN J.B.L. CALC. BOOK 662

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

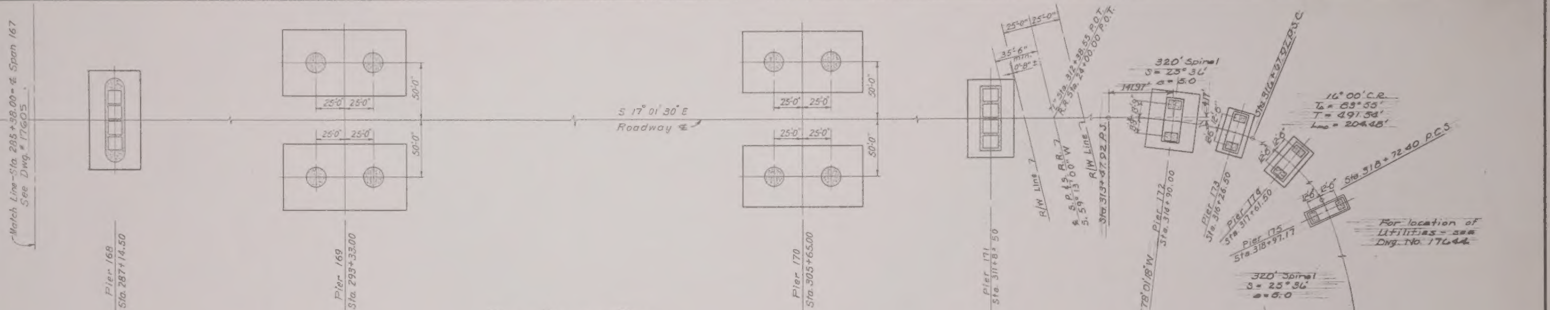
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.

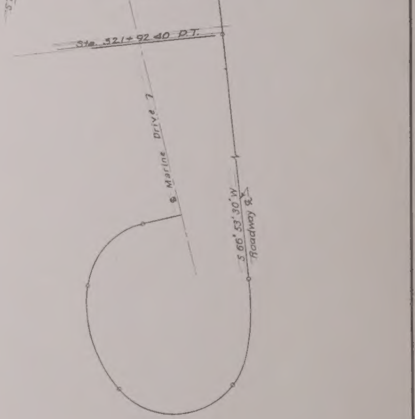
PIER CONTRACT

FOOTING PLAN

DATE 1-9-1962 SHEET 5 OF 58

BRIDGE NO. 7949 DRAWING NO. 17605

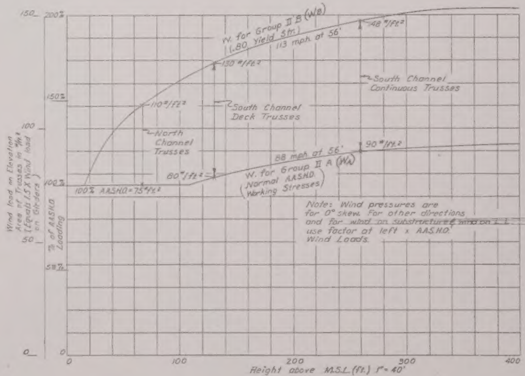




PART FOOTING PLAN
Scale 1" = 40'-0"

DESIGN LOAD GROUPS AND ALLOWABLE STRESSES		Percentage of basic unit Stress
Group I — D + L + I + E + B + SF	—	100%
Group II A — D + E + B + SF + W_A	—	125%
Group II B — D + E + B + SF + W_B	—	160%
Group III A — Group I + LF + F + CF + 30% W_A + WL_A	—	125%
Group III B — Group I + LF + F + CF + 30% W_B + WL_B	—	160%
Group IV — Group I + T	—	125%
Group V A — Group II A + T	—	140%
Group V B — Group II B + T	—	160%
Group VI A — Group III A + T	—	140%
Group VI B — Group III B + T	—	160%
Group VII — D + E + B + SF + EQ	—	133⅓%

D — Dead Load
L — Live Load
I — Live Load Impact
E — Earth Pressure
B — Bouyancy
W — Wind Load on Structure
WL — Wind Load on Live Load
LF — Longitudinal Force on Live Load
F — Longitudinal Force due to Friction
T — Temperature
EQ — Earthquake
SF — Stream Flow Pressure
CF — Centrifugal Force



Note: Wind pressures are for 0° skew. For other directions and for wind on substructure & wind on L.L. use factor at left x AASHO Wind Loads.

WIND FORCES

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE:
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0".
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN J.B.L.
CALC. BOOK 662

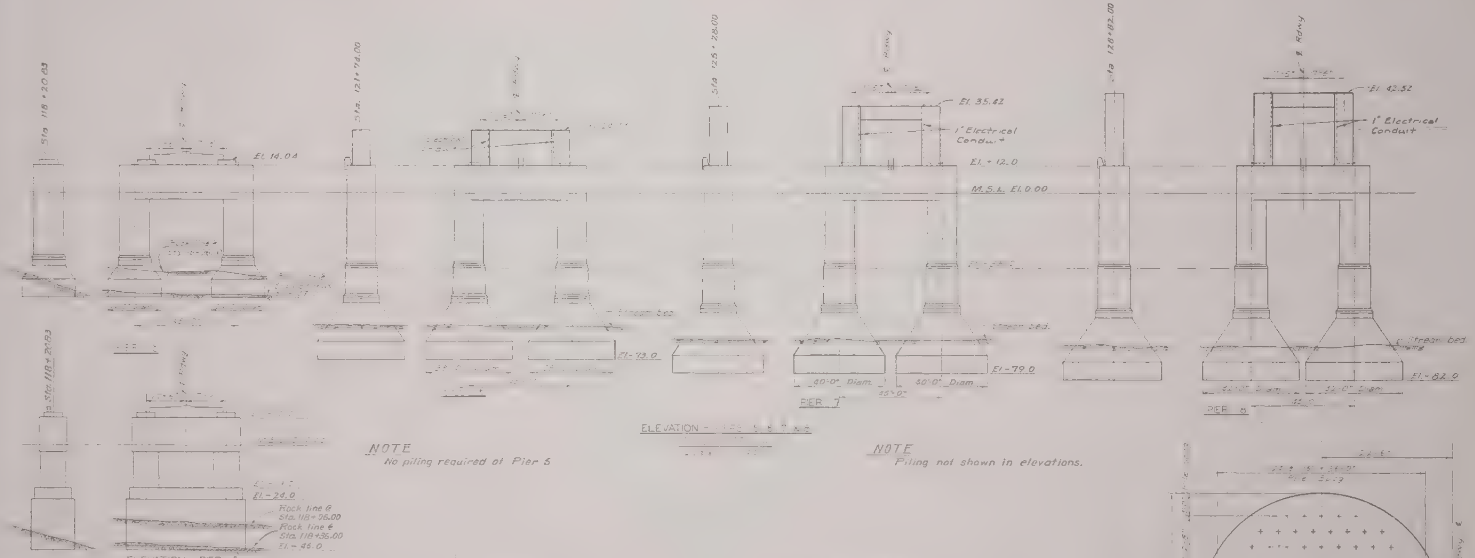
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.

PIER CONTRACT

FOOTING PLAN

DATE 1-9-1962
SHEET 6 OF 58
BRIDGE NO. 7949
DRAWING NO. 17606



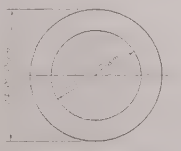
ELEVATION - PIERS 5, 6, 7 & 8

ELEVATION - PIER 5
ALTERNATE B

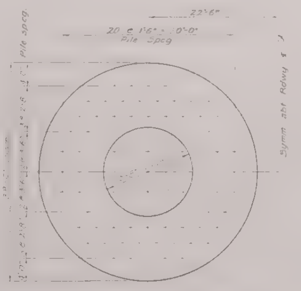
NOTE
No piling required at Pier 5

NOTE
Piling not shown in elevations.

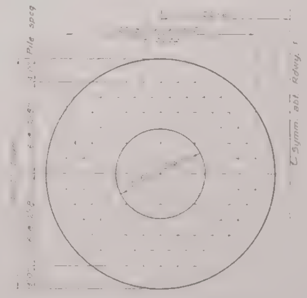
NOTE
Pier 5 Alternate "B" may be used with Alternate "A" Piers 6 thru 12.
Pier 5 Alternate "A" may not be used with Piers 6 thru 12 Alternate "B"



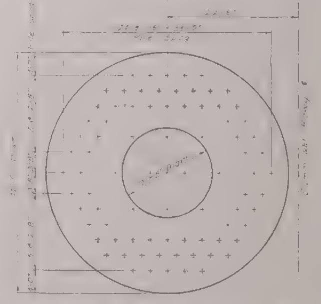
No Piling Required
PIER 5



70-14" Precast Prestressed Concrete Piles
PIER 6



77-14" Precast Prestressed Concrete Piles
PIER 7



82-14" Precast Prestressed Concrete Piles
PIER 8

FOOTING PLAN - PIERS 5, 6, 7 & 8
ALTERNATE A
Scale: 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/4"=1'-0"
SHOULD BE READ 3/8"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED
BRIDGE ENGINEER

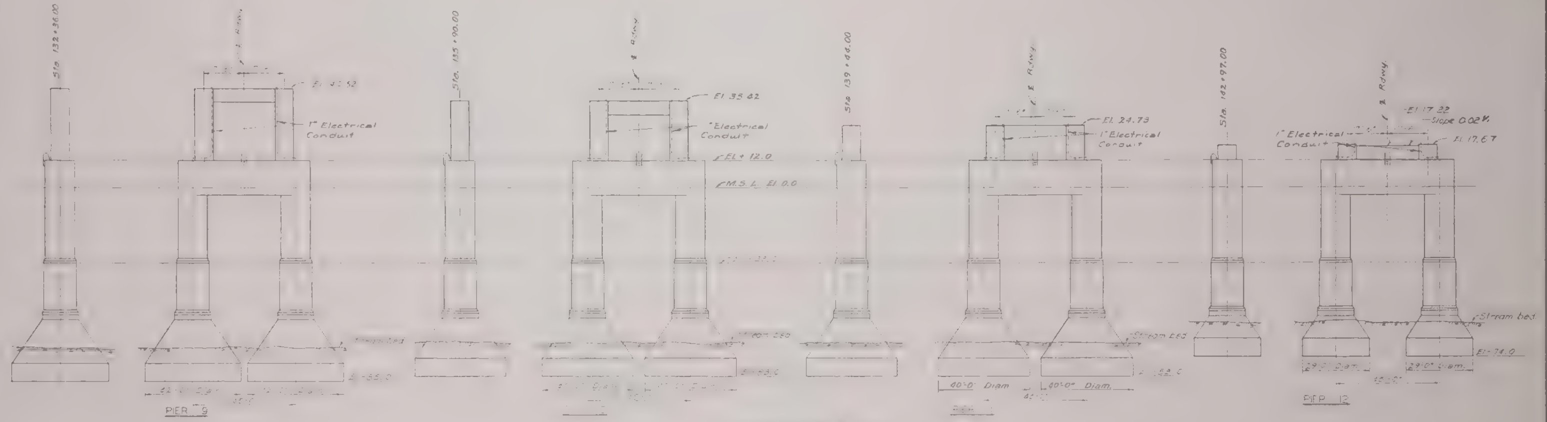
DESIGNED JEE
CHECKED
DRAWN
CALC BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

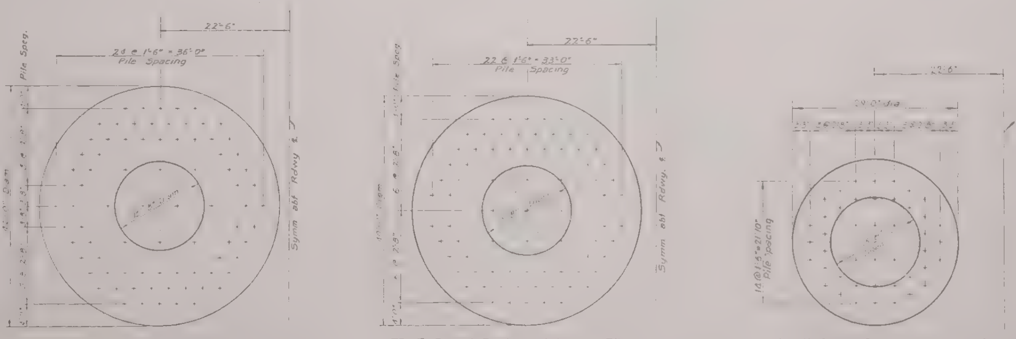
ELEVATIONS & PILE LAYOUTS - PIERS 5, 6, 7 & 8 - ALT. A

DATE JAN 3, 1962
SHEET 7 OF 58
BRIDGE NO 7949
DRAWING NO 17607



ELEVATION - PIERS 9, 10, 11 & 12
ALTERNATE A
Scale: 1" = 20'

NOTE
Piling not shown in elevations.



82-14" Precast Prestressed Concrete Piles
PIER 9

77-14" Precast Prestressed Concrete Piles
PIERS 10 & 11

44-14" Precast Prestressed Concrete Piles
PIER 12

HALF FOOTING PLAN - PIERS 9, 10, 11 & 12
ALTERNATE A
Scale: 1/8" = 1'-0"

Pier	Loads
5	550 Tons / sq ft
6	476 Tons / pile
7	450 Tons / pile
8	433 Tons / pile
9	445 Tons / pile
10	459 Tons / pile
11	454 Tons / pile
12	363 Tons / pile

Note: Loads shown are 0.80 x actual Group II A loads.
Piling shall be driven for the basic design load as shown in above table.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

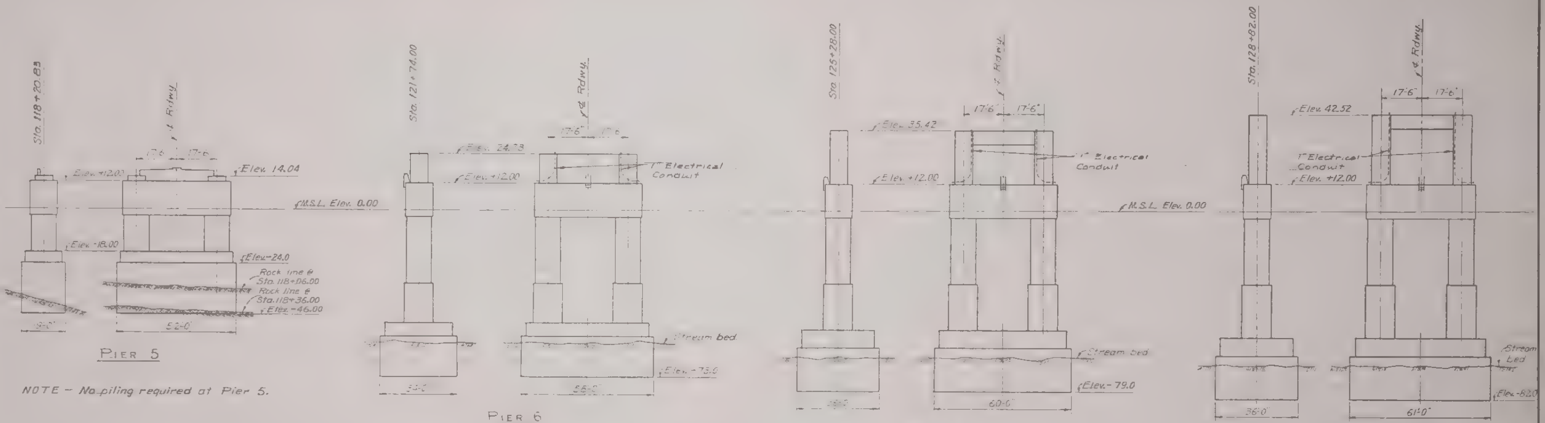
APPROVED:
BRIDGE ENGINEER
DESIGNED JEB
DRAWN
CHECKED
CALC. BOOK 692

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATIONS & PILE LAYOUTS - PIERS 9, 10, 11 & 12 - ALT A

DATE FEB 23, 1962
SHEET 8 OF 58
BRIDGE NO 7949
DRAWING NO 17608



PIER 5

NOTE – No piling required at Pier 5.

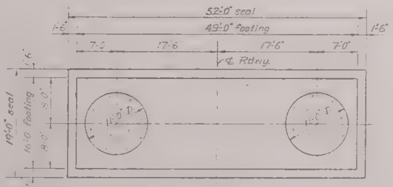
PIER 6

PIER 7

PIER 8

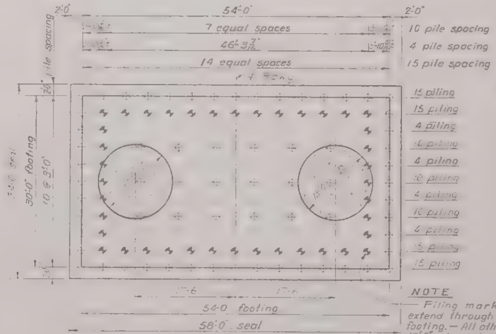
NOTE – Piling not shown in elevations.

ELEVATIONS – PIERS 5 THRU 8
ALTERNATE – B
Scale 1" = 20'-0"



No piling required.

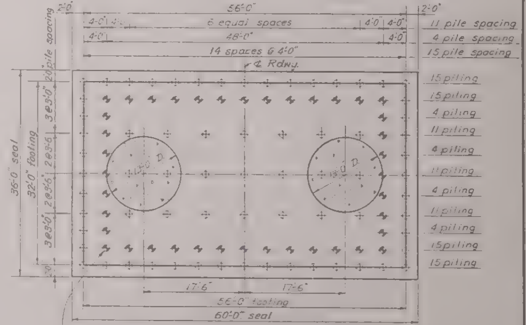
FOOTING PLAN – PIER 5
ALTERNATE – B
Scale 1/8" = 1'-0"



106 – 14" Precast Prestressed Concrete Piles.

FOOTING PLAN – PIER 6
ALTERNATE – B
Scale 1/8" = 1'-0"

NOTE
– Piling marked thus, ◑, to extend through seal and 6" into footing. – All other piling to extend 12'-0" min. into seal.



109 – 14" Precast Prestressed Concrete Piles.

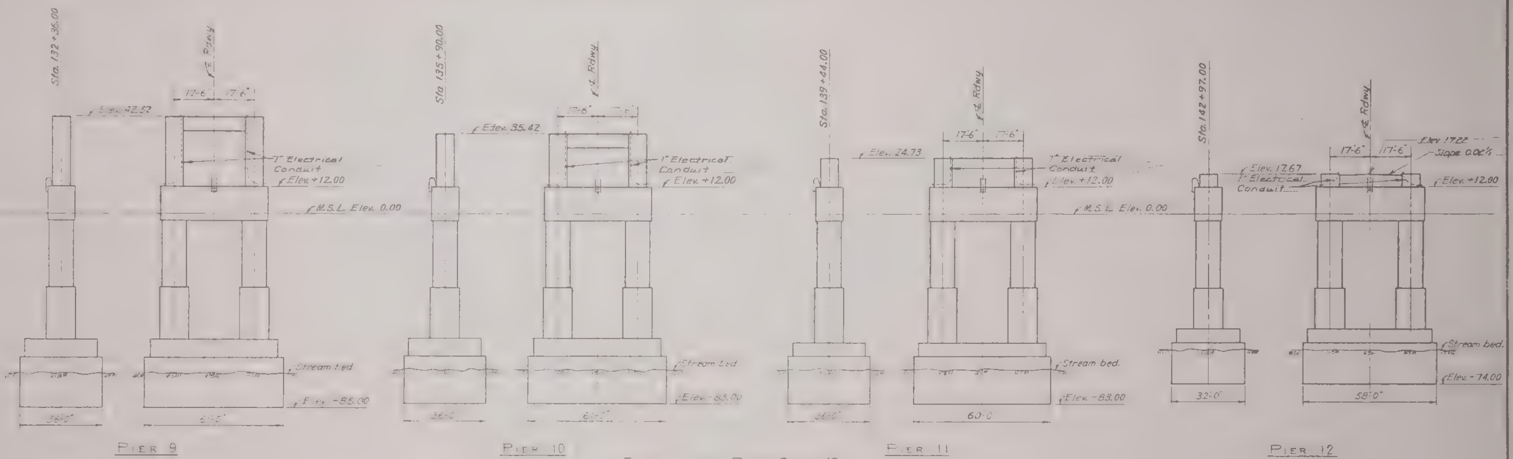
FOOTING PLAN – PIERS 7 & 11 – ALTERNATE B
Scale 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS
1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 1/4" = 1'-0"
SHOULD BE READ 1/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER
DESIGNED GJB
DRAWN JBL
CHECKED
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
ELEVATIONS & PILE LAYOUTS - PIERS 5, 6, 7 & 8 ALT B
DATE JAN 4, 1962
SHEET 9 OF 98
BRIDGE NO. 7949
DRAWING NO. 17609

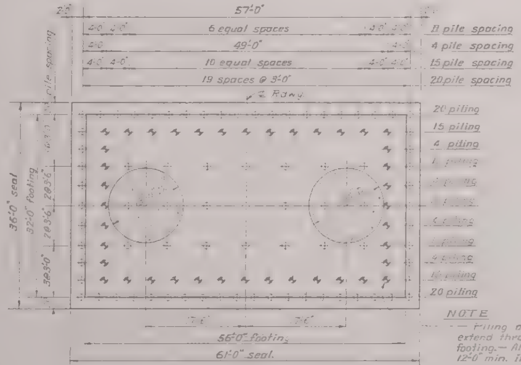


ELEVATIONS – PIERS 9 THRU 12

ALTERNATE-B

Scale 1"=20'-0"

NOTE – Piling not shown in elevations.



NOTE

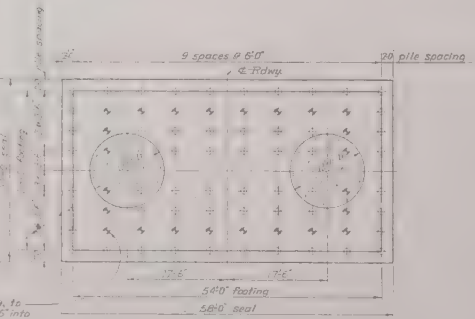
Piling marked thus, ⊕, to extend through seal and 6" into footing.– All other piling to extend 12'-0" min. into seal.

119 – 14" Precast Prestressed Concrete Piles.

FOOTING PLAN – PIERS 8, 9, & 10

ALTERNATE-B

Scale ⅛"=1'-0"



80 – 14" Precast Prestressed Concrete Piles.

FOOTING PLAN – PIER 12

ALTERNATE-B

Scale ⅛"=1'-0"

Pier	Load
5	4.8 Tons/sqft
6	60.5 Tons/Pile
7	60.2 Tons/Pile
8	59.0 Tons/Pile
9	59.0 Tons/Pile
10	59.0 Tons/Pile
11	60.2 Tons/Pile
12	59.4 Tons/Pile

Note: Loads shown are 0.80 x actual Group II A loads
Piling shall be driven for the basic design load as shown in above table

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

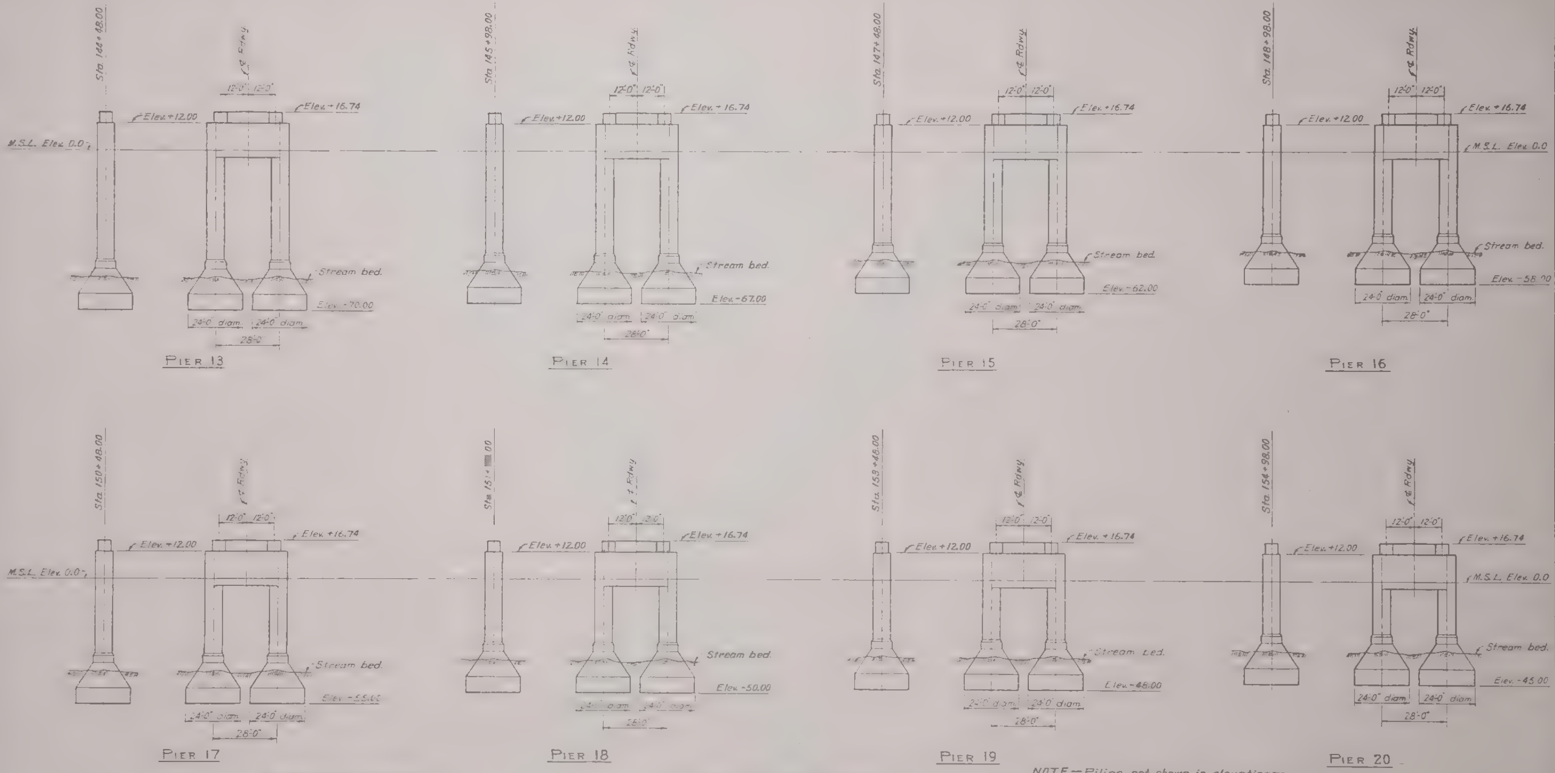
APPROVED
Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED GJE CHECKED
DRAWN JBL CALC. BOOK 662

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATIONS & PILE LAYOUTS – PIERS 9, 10, 11 & 12 – ALT B

DATE JAN 4, 1962 SHEET 10 OF 58
BRIDGE NO. 7949 DRAWING NO. 17610



NOTE—Piling not shown in elevations:-
See Dwg. #17613 for Pile details & footing plans.

ELEVATION—PIERS 13 THRU 20
ALTERNATE—A

Pier Nos	Pile Load in tons/pile
13	5[illegible].75
14	55.65
15	47.25
16	58.50
17	55.50
18	53.25
19	5[illegible].75
20	50.00

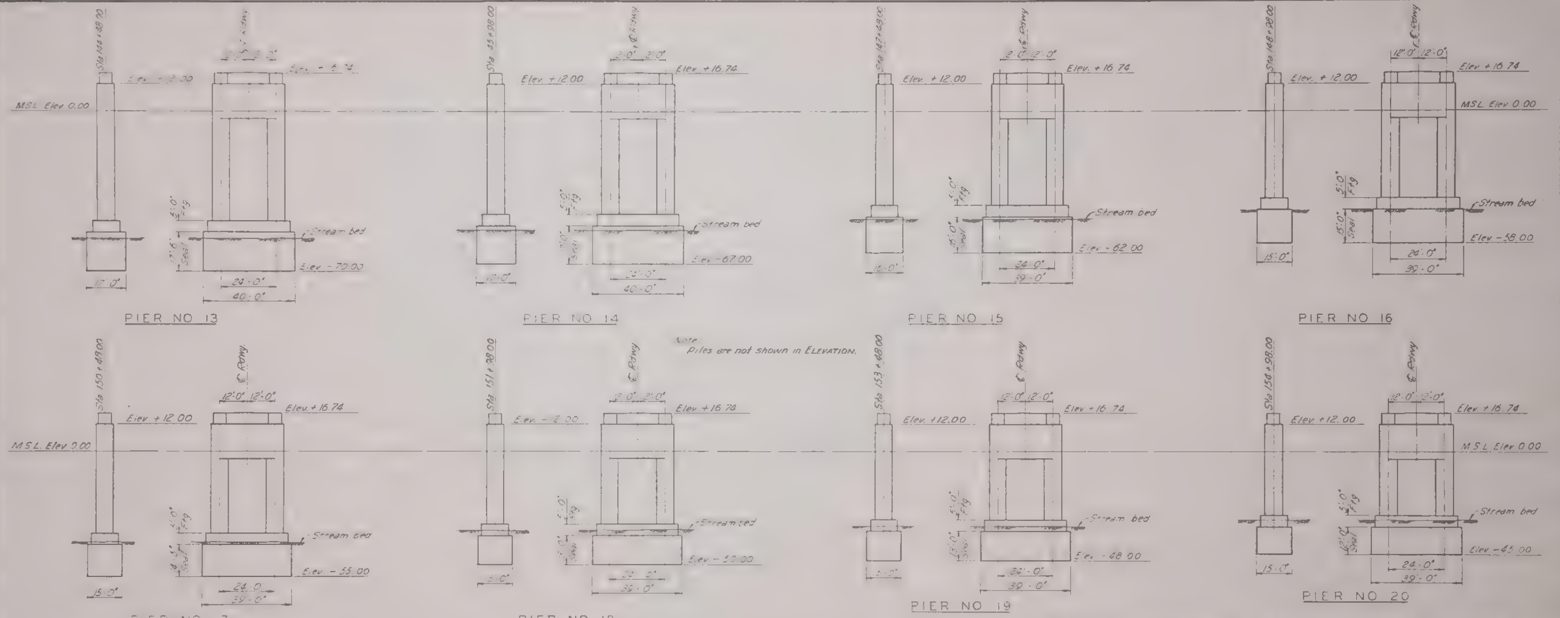
Note: Load shown are 0.75 of actual Group VII Loads.
-Piling shall be driven for the basic design load as shown in above table.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED S.L. CHECKED
DRAWN L.B.L. CALC. BOOK 662

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
ELEVATION - PIER 13 THRU 20 ALT 'A'
DATE 1-9-1962 SHEET 11 OF 58
BRIDGE NO. 7949 DRAWING NO. 17611



PIER NO 13

PIER NO 14

PIER NO 15

PIER NO 16

Note:
Piles are not shown in ELEVATION.

PIER NO 17

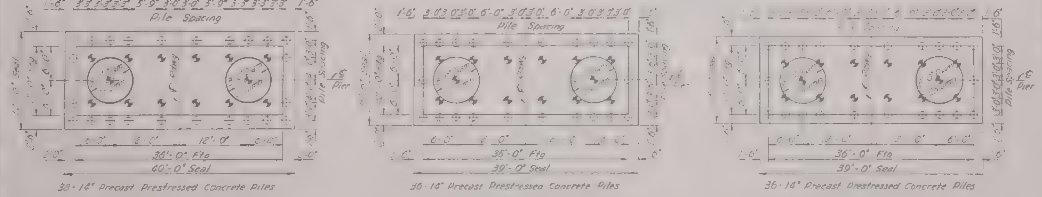
PIER NO 18

PIER NO 19

PIER NO 20

ELEVATION - PIER NO 13 THRU 20 - ALTERNATE B

Scale 1" = 20'-0"



38-14" Precast Prestressed Concrete Piles

FOOTING PLAN - PIER NO 13 & 14

36-14" Precast Prestressed Concrete Piles

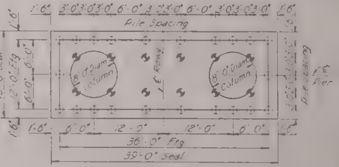
FOOTING PLAN - PIER NO 15

36-14" Precast Prestressed Concrete Piles

FOOTING PLAN - PIER NO 16

Pier Nos	Pile Load - tons/pile
13	53.76
14	53.25
15	53.76
16	52.90
17	54.75
18	51.00
19	49.50
20	45.50

Note: Loads shown are 0.75 of actual Group VII Load.
Piling shall be driven for the basic design load as shown in above table.



36-14" Precast Prestressed Concrete Piles

FOOTING PLAN - PIER NO 17 THRU. 20

Note. Piles marked thus, ⊗, to be extended through seal and 6" into footing.
All other piles to stop 1'-6"± below top of seal.

FOOTING PLANS & PILE LAYOUTS - PIER NO 13 THRU 20 - ALTERNATE B

Scale 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 1/4" = 1'-0"
SHOULD BE READ 1/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED.
Illerchant
BRIDGE ENGINEER

DESIGNED S.L. CHECKED
DRAWN S.L. CALC. BOOK 662

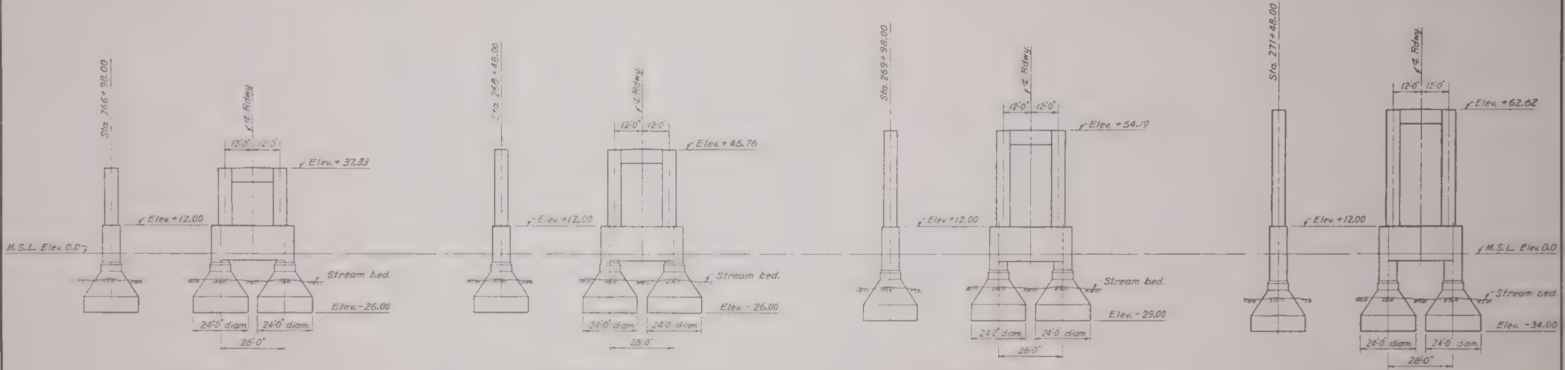
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATIONS & PILE LAYOUTS - PIER NO 13-20 - ALT B

DATE 2-13-1962 SHEET 12 OF 58

BRIDGE NO 7949 DRAWING NO 17612



PIER 160

PIER 161

PIER 162

PIER 163

ELEVATION—PIERS 160 THRU 163

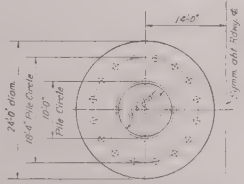
ALTERNATE—A

Scale 1" = 20'-0"

NOTE

Piling not shown in elevations.

Note: Pier No. 160 thru. 163
Max Pile Load = 59.50 tons/pile
Pile Load shown is 0.75 of actual Group VII Loads
Piling shall be driven for the basic design load.



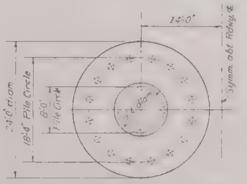
21-14" Precast Prestressed Concrete Piles

HALF FOOTING PLAN

PIERS 13 & 14

ALTERNATE—A

Scale 1/8" = 1'-0"



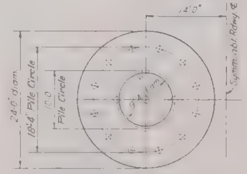
20-14" Precast Prestressed Concrete Piles.

HALF FOOTING PLAN

PIER 15

ALTERNATE—A

Scale 1/8" = 1'-0"



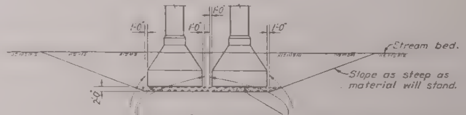
17-14" Precast Prestressed Concrete Piles.

HALF FOOTING PLAN

PIERS 16 THRU 20 & 160 THRU 163

ALTERNATE—A

Scale 1/8" = 1'-0"



Limit of pay excavation 1'-0" outside neat lines of base rings and extending 2'-0" below bottom. Backfill to bottom of footing elev. after driving piling.

See drawing #17617 for Pier #5 Excavation diagram.

EXCAVATION DIAGRAM

ALTERNATE—A FOOTINGS

Scale 1" = 20'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER

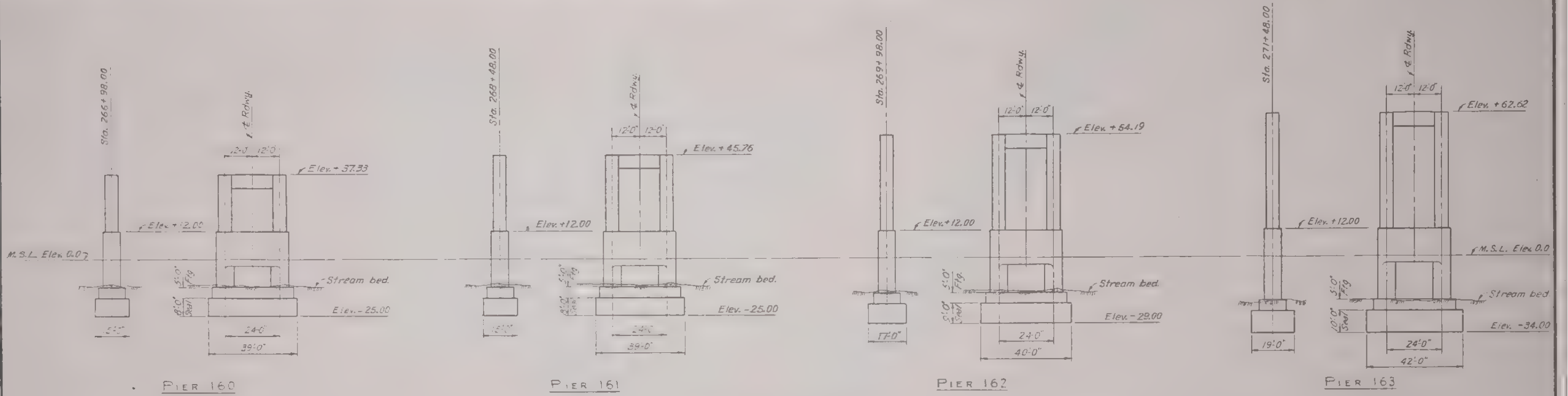
DESIGNED C.L. CHECKED
DRAWN J.B.L. CALC. BOOK 662

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATION - PIER 160 - 163 - PILE LAYOUT ALT. "A"

DATE 1-9-1962 SHEET 13 OF 58
BRIDGE NO. 7949 DRAWING NO. 17613



ELEVATION—PIERS 160 THRU 163

ALTERNATE—B

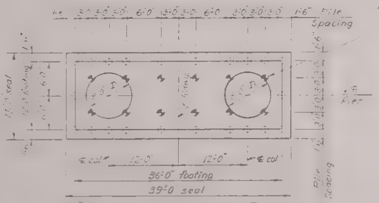
Scale 1" = 20'-0"

NOTE

Piling not shown in elevations.

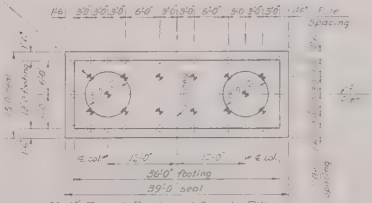
NOTE. (Piers 160 thru 163)

Piling marked thus, ●, to extend through seal and 6" into footing.— All other piling to stop 1'-6"± below top of seal.



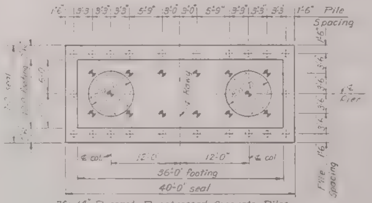
34- 14" Precast Prestressed Concrete Piles.

FOOTING PLAN—PIER 160—ALTERNATE B



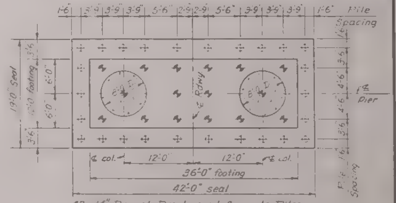
36- 14" Precast Prestressed Concrete Piles

FOOTING PLAN—PIER 161—ALTERNATE B



36- 14" Precast Prestressed Concrete Piles.

FOOTING PLAN—PIER 162—ALTERNATE B



42- 14" Precast Prestressed Concrete Piles.

FOOTING PLAN—PIER 163—ALTERNATE B

Pier Nos	Pile Load in tons/pile
160	62.30
161	61.60
162	66.10
163	63.95

Note Load shown are 0.80 of actual Group II-A Load.
Piling shall be driven for the basic design load as shown in above table.

FOOTING PLANS & PILE LAYOUTS - PIER NO. 160 THRU 163 - ALTERNATE B

Scale 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 1/4" = 1'-0" SHOULD BE READ 1/8" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

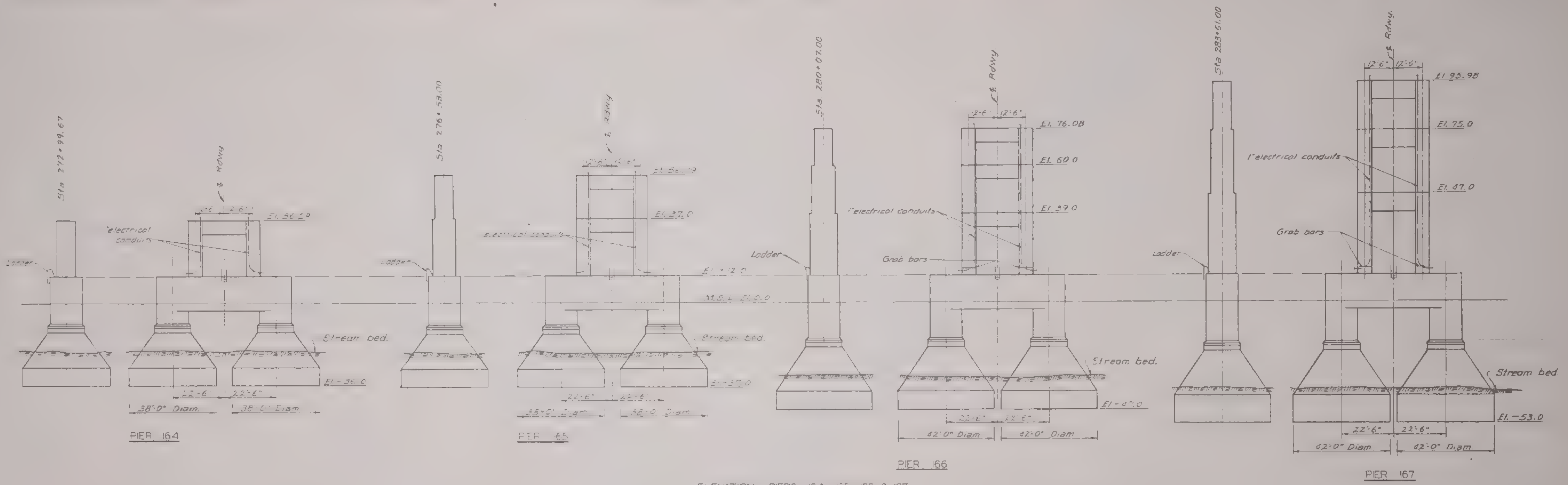
APPROVED:
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN E.L.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

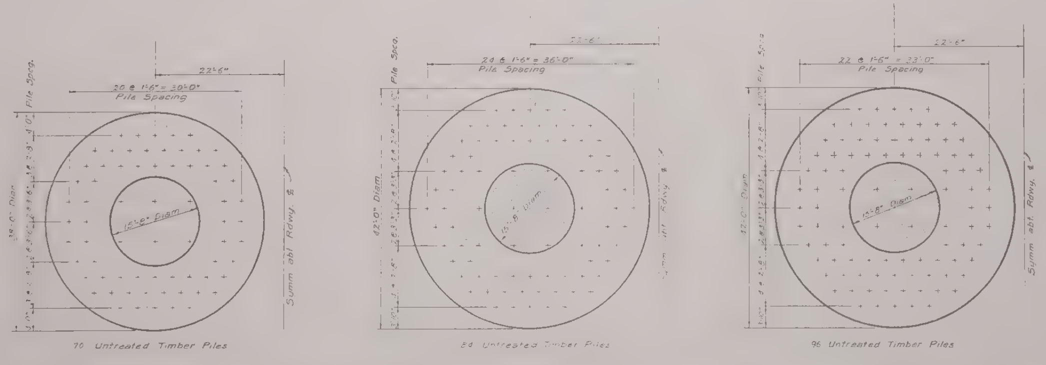
ELEVATIONS & PILE LAYOUTS-PIERS 160-163-ALT. B

DATE Feb. 1, 1962
SHEET 14 OF 58
BRIDGE NO 7949
DRAWING NO 17614



ELEVATION PIERS 164 165 166 & 167
ALTERNATE A
Scale: 1" = 20'

NOTE
Piling not shown in elevations.



70 Untreated Timber Piles

PIERS 164 & 165

84 Untreated Timber Piles

PIER 166

96 Untreated Timber Piles

PIER 167

HALF FOOTING PLAN - PIERS 164 165 166 & 167
ALTERNATE A
Scale: ⅜ = 1'-0"

Pier	Load
164	30.3 T/pile
165	38.1 T/pile
166	38.9 T/pile
167	40 T/pile

Note:
Loads shown are 0.80 × actual Group II A loads.
Piling shall be driven for the basic design load as shown in above table.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0".
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED
Ivan D. Merchant
BRIDGE ENGINEER

DESIGNED J.M.T.
CHECKED
DRAWN M.H.
CALC. BOOK 662

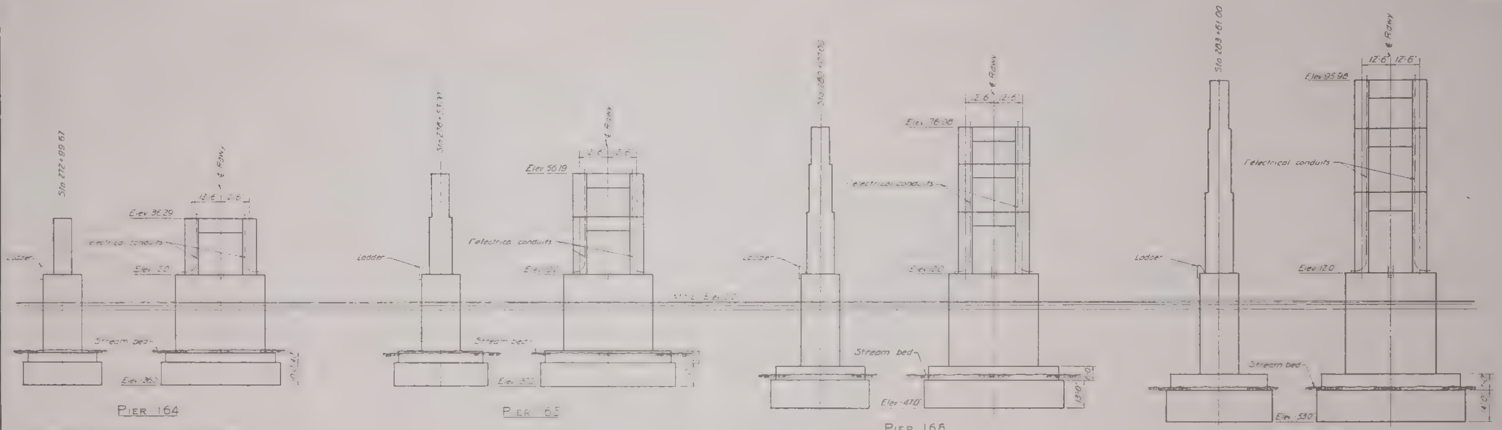
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATION & PILE LAYOUT - PIER 164 - 167 ALT 'A'

DATE 1-9-1962
SHEET 15 OF 58
BRIDGE NO. 7949
DRAWING NO. 17615

APR 2 1962



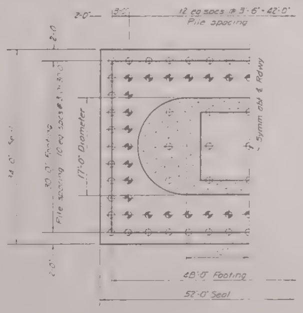
Note Piling not shown in elevation view

ELEVATION - PIERS 164, 165, 166, & 167
ALTERNATE B
Scale 1" = 20'-0"

Note Piles marked with symbol ⊕ to extend through seal and 6" into footing. All other piles to extend 8'-0" min into seal.

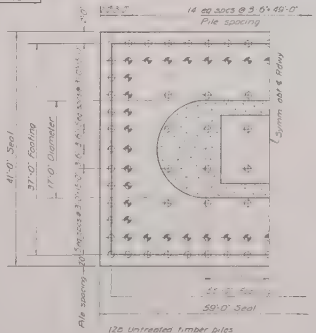
Pier	Load
164	34.8 T/pile
165	38.5 T/pile
166	40.0 T/pile
167	39.4 T/pile

Loads shown are 0.8 × actual Group II A loads
Piling shall be driven for the basic design load as shown in the table



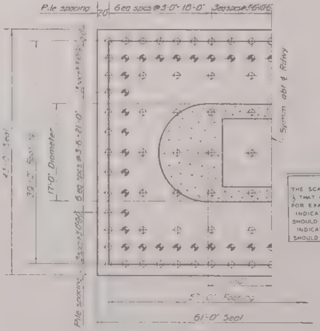
103 Untreated timber piles

Pier 164



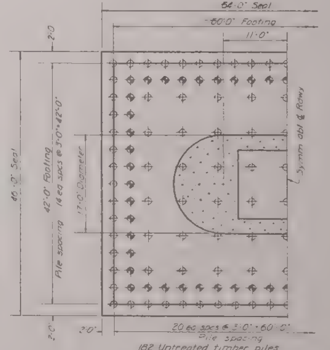
128 Untreated timber piles

Pier 165



152 Untreated timber piles

Pier 166



182 Untreated timber piles

Pier 167

HALF FOOTING PLAN - PIERS 164, 165, 166, & 167
ALTERNATE B
Scale 3/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0"
SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

APR 2 1962

DATE	REVISION

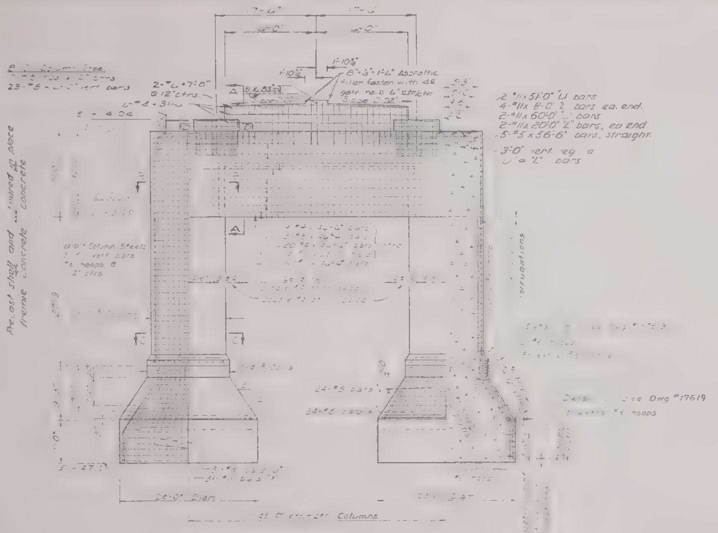
APPROVED
Marchant
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

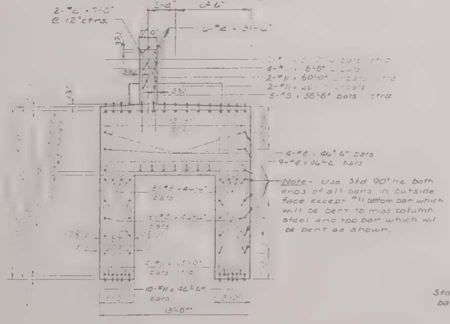
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATION & PILE LAYOUT - PIER 164 - 167 ALT 'B'

DATE FEB. 26, 1962
SHEET 16 OF 58
BRIDGE NO. 7949
DRAWING NO. 17616

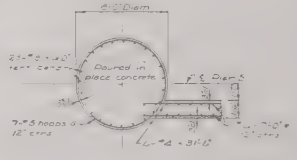

17'-6"
17'-6"
1'-10½"
1'-10½"
8" x 3" x 1'-6" Asphaltic filler fasten with 4d galv. nails 6" ctrs.
2-#6 x 7'-0" @ 12" ctrs.
6-#4 x 31'-6"
23-#8 x ... vert. bars
2-#11 x 51'-0" "U" bars
4-#11 x 8'-0" "L" bars ea. end.
2-#11 x 60'-0" "_" bars
2-#11 x 20'-0" "L" bars, ea. end
5-#5 x 56'-6" bars, straight.
3'-0" vert. leg of "U" & "L" bars
Precast shell and tremie concrete poured in place concrete
13'-0" Column Steel: vert. bars #5 hoops @ 12" ctrs.
24-#5 bars
Details see Dwg #17619
#5 hoops
24'-0" Diam.
35'-0" ctr.-ctr. Columns

ELEVATION - PIER 5
ALTERNATE A
Scale: 1/8" = 1'-0"

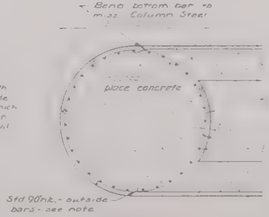


Note - Use Std 90° hk. both ends of all bars in outside face except #11 bottom bar which will be bent to miss column steel and top bar which will be bent as shown.

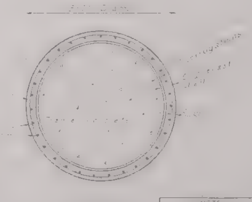
SECTION A-A
Scale: 1/8" = 1'-0"



SECTION D-D

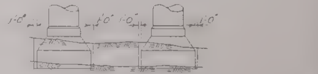

Bend bottom bar to miss Column Steel
Poured in place concrete
Std 90° hk. - outside bars - see note

SECTION E-E



SECTION C-C

Scale: 3/8" = 1'-0"



Limit of pay excavation 1'-0" outside of neat lines of base ring and extending to bottom of ring.

EXCAVATION DIAGRAM - PIER 5

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER

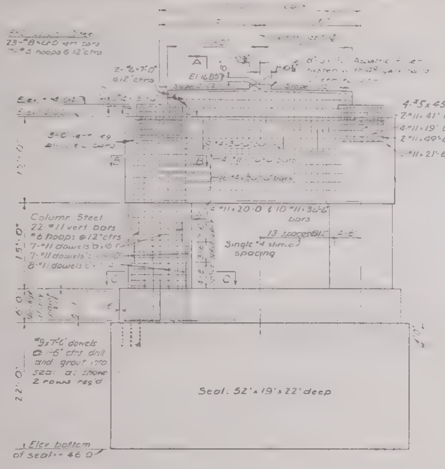
DESIGNED MAC
DRAWN MK
CHECKED
CALC. BOOK 645

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

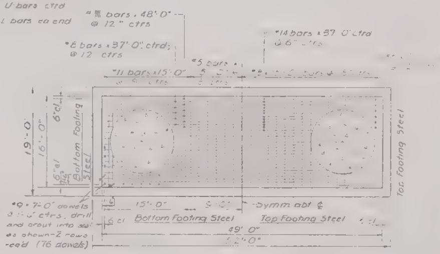
DETAILS - PIER 5 - ALTERNATE A

DATE JAN. 3, 1962
SHEET 17 OF 58
BRIDGE NO. 7949
DRAWING NO. 17617



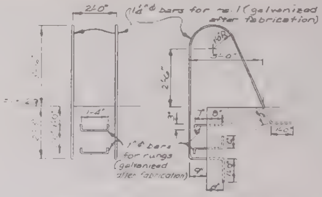
ELEVATION - PIER 5

Scale 1/8" = 1'-0"


#8 bars × 48'-0" @ 12" ctrs
#14 bars × 37'-0" ctrd @ 6" ctrs
#6 bars × 37'-0" ctrd; @ 12" ctrs
#5 bars
#11 bars × 15'-0"
19'-0"
16'-0"
6'-0"
Bottom Footing Steel
Top Footing Steel
#9 × 7'-0" dowels @ 1'-6" ctrs, drill and grout into seal as shown - 2 rows req'd (76 dowels)
15'-0"
5'-0"
Symm abt ℄
Bottom Footing Steel
Top Footing Steel
49'-0"
52'-0"

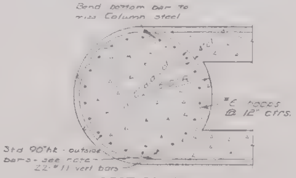
FOOTING PLAN

Scale 1/8" = 1'-0"


2'-0"
1 1/4" ϕ bars for rail (galvanized after fabrication)
1'-4"
2'-6"
3'-0"
1" ϕ bars for rungs (galvanized after fabrication)

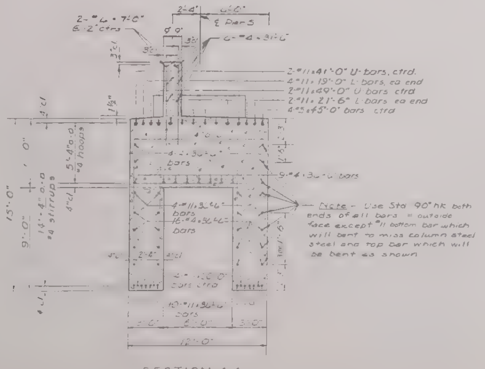
LADDER DETAILS - PIERS 6-12

Scale: 1/2" = 1'-0"


Bend bottom bar to miss Column steel
#6 hoops @ 12" ctrs.
Std 90° hk - outside bars - see note
22-#11 vert bars

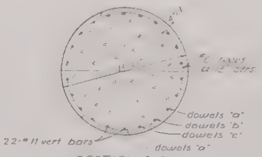
SECTION B-B

Scale: 1/4" = 1'-0"



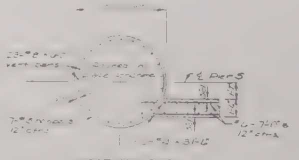
SECTION A-A

Scale 1/8" = 1'-0"



SECTION C-C

Scale 1/4" = 1'-0"



SECTION D-D

NOTE
THE SCALE OF THIS PRINT IS
1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 1/4"=1'-0"
SHOULD BE READ 1/8"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED: Ivan Merchant
BRIDGE ENGINEER
DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

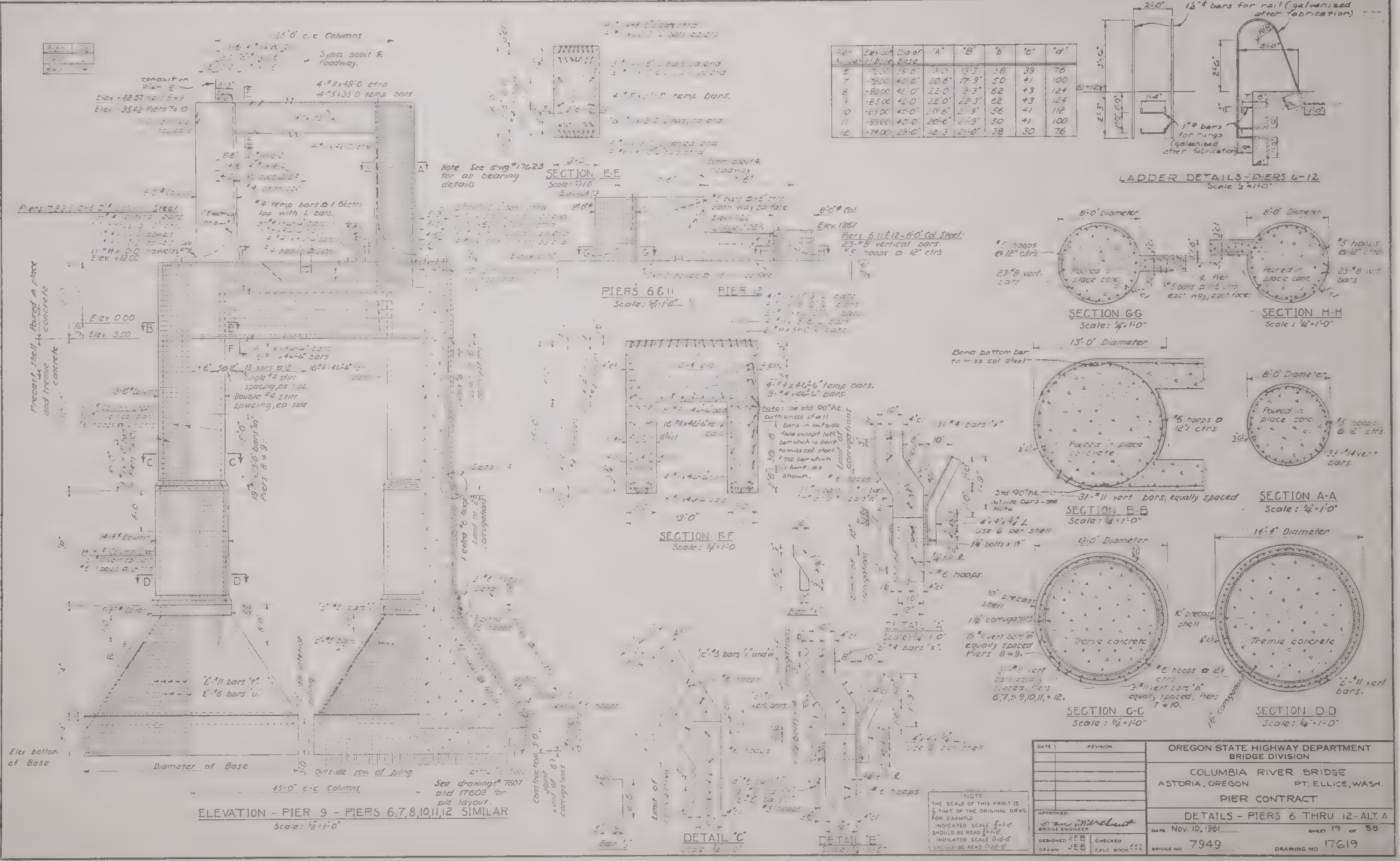
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS - PIER 5 - ALTERNATE 1B

DATE JAN. 4, 1962
SHEET 18 OF 58
BRIDGE NO 7949
DRAWING NO 17618

APR 2 1962



Pier Number	Elev of Base	Dia of base	"A"	"B"	"b"	"c"	"d"
6	-72.00	35'-0"	[illegible]	15'-3"	38	39	76
7	-79.00	40'-0"	20'-6"	17'-9"	50	41	100
8	-82.00	42'-0"	22'-0"	9'-3"	62	43	124
9	-85.00	42'-0"	22'-0"	22'-3"	62	43	124
10	-83.00	40'-0"	20'-6"	21'-9"	56	41	112
11	-83.00	40'-0"	20'-6"	21'-9"	50	41	100
12	-74.00	29'-0"	12'-3"	21'-0"	38	30	76

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED:
BRIDGE ENGINEER

DESIGNED JEB CHECKED
DRAWN JEB CALC BOOK 661

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

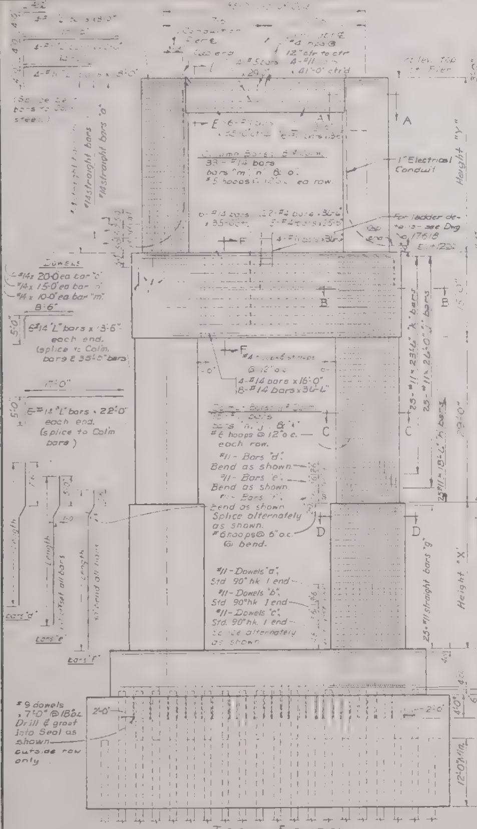
DETAILS - PIERS 6 THRU 12 - ALT. A

DATE Nov. 10, 1961 SHEET 19 OF 58
BRIDGE NO 7949 DRAWING NO 17619

APR 2 1962

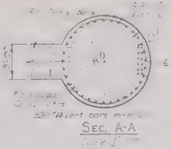
COLUMN REINFORCEMENT

Pier No.	Elevation Top Ftg.	Elevation Top Pier	Columns Height "X"	Columns Height "Y"	Dowels "a" std 90° hk 1 end No	Size	Length	Dowels "b" std 90° hk 1 end No	Size	Length	Dowels "c" std 90° hk 1 end No	Size	Length	Bars "d" bend as shown No	Size	Length	Bars "e" bend as shown No	Size	Length	Bars "f" bend as shown No	Size	Length	Bars "g" straight No	Size	Length	Bars "m" straight No	Size	Length	Bars "n" straight No	Size	Length	Bars "o" straight No	Size	Length
6	-49.0	+24.[illegible]	17.00	12.33	25	#11	17'-5"	25	#11	13'-11"	50	#11	10'-5"	25	#11	[illegible]'-4"	25	#11	17'-4"	25	#11	19'-6"	25	#11	16'-9"	23	#8	16'-0"	—	—	—	—	—	—
7	-52.0	+35.[illegible]	20.00	33.42	25	#11	19'-5"	25	#11	15'-11"	50	#11	12'-5"	25	#11	19'-4"	25	#11	20'-4"	25	#11	22'-6"	25	#11	19'-9"	11	#14	23'-2"	11	#14	18'-2"	11	#14	13'-2"
8	-53.0	+42.[illegible]	21.00	30.52	25	#11	19'-5"	25	#11	15'-11"	50	#11	12'-5"	25	#11	20'-4"	25	#11	21'-4"	25	#11	23'-6"	25	#11	20'-9"	11	#14	30'-5"	11	#14	25'-3"	11	#14	20'-3"
9	-55.0	+42.52	23.00	30.52	25	#11	19'-5"	25	#11	15'-11"	50	#11	12'-5"	25	#11	22'-4"	25	#11	23'-4"	25	#11	25'-6"	25	#11	22'-9"	11	#14	30'-3"	11	#14	25'-3"	11	#14	20'-3"
10	-54.0	+3[illegible]	22.00	23.42	25	#11	19'-5"	25	#11	15'-11"	50	#11	12'-5"	25	#11	21'-4"	25	#11	22'-4"	25	#11	24'-6"	25	#11	21'-9"	11	#14	23'-2"	11	#14	18'-2"	11	#14	13'-2"
11	-56.0	+[illegible]	24.00	12.33	25	#11	17'-5"	25	#11	13'-11"	50	#11	10'-5"	25	#11	23'-4"	25	#11	24'-4"	25	#11	26'-6"	25	#11	23'-9"	23	#8	16'-0"	—	—	—	—	—	—
12	-50.0	+12.67	8.00	5.07	25	#11	17'-5"	25	#11	13'-11"	50	#11	10'-5"	25	#11	17'-4"	25	#11	18'-4"	25	#11	20'-6"	25	#11	17'-9"	23	#8	8'-11"	—	—	—	—	—	—

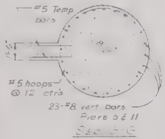


4-#11 bars x 8'-0"
(Splice bars to Col. steel)
Conduit
#4 hoops @ 12" ctr to ctr
4-#11 x 41'-0" ctr'd
Elev. Top of Pier
#14 straight bars "n"
#14 straight bars "o"
Column Bars: 13'-4" Colm.
38-#14 bars
bars "m", "n", & "o"
#5 hoops @ 12" o.c. ea row.
1" Electrical Conduit
For ladder details see Dwg. 17618
Height "Y"
A
E
F
B
C
D
DOWELS
#14 x 20'-0" ea bar "o"
#14 x 15'-0" ea bar "n"
#14 x 10'-0" ea bar "m"
8'-6"
5-#14 "L" bars x 13'-6" each end. (splice to Colm. bars & 35'-0" bars)
17'-0"
6-#14 "L" bars x 22'-0" each end (splice to Colm bars)
4-#14 bars x 16'-0"
8-#14 bars x 30'-0"
bars "h", "j" & "k"
#6 hoops @ 12" o.c. each row.
#11 - Bars "d". Bend as shown
#11 - Bars "e". Bend as shown
#11 - Bars "f". Bend as shown
Splice alternately as shown.
#6 hoops @ 6" o.c. @ bend.
Column Bars: 13'-0" Colm.
100-#11 bars
bars "d", "e", "f", "g"
#6 hoops @ 12" o.c. ea row
25-#11 x 23'-4" "k" bars
25-#11 x 26'-0" "j" bars
25-#11 x 18'-4" "h" bars
25-#11 straight bars "g"
Height "X"
#11 - Dowels "a". Std. 90° hk 1 end
#11 - Dowels "b". Std. 90° hk 1 end
#11 - Dowels "c". Std. 90° hk 1 end
Splice alternately as shown
Elev. -32.00
bars "d"
bars "e"
bars "f"
#9 dowels 7'-0" @ 18" o.c. Drill & grout into Seal as shown outside row only
2'-0"
4'-0"
6'-0"
Ftg. depth
Seal depth
12'-0" Min.
Elev. bottom of seal.

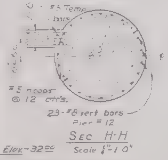
TYPICAL ELEVATION
Scale 1/8"=1'-0"



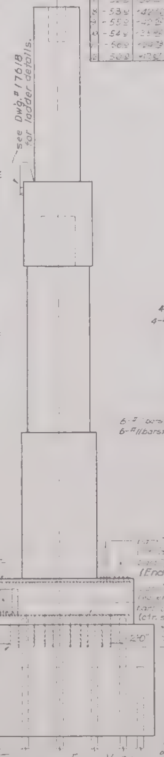
SEC. A-A



SEC. G-G

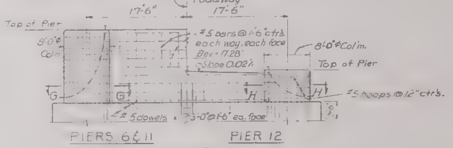


SEC. H-H
Scale 1/4"=1'-0"



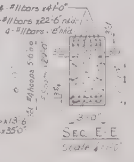
See Dwg. #17618 for ladder details.
bars "z"
bars "v" (Cont)
bars "x" (Ends)
bars "w" (ctr. sect.)
#9 dowels 7'-0" @ 18" o.c. Drill & grout into Seal as shown outside row only
#9 dowels 7'-0" @ 18" o.c. Drill & grout into Seal as shown outside row only
2'-0"

TYPICAL END VIEW
Scale: 1/8"=1'-0"

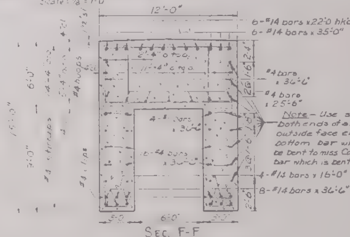


PIERS 6 & 11 PIER 12

Scale 1/8"=1'-0"

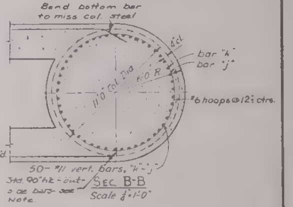


SEC. E-E
Scale 1/4"=1'-0"



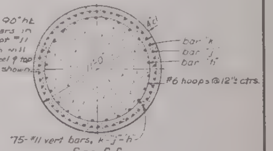
12'-0"
6-#14 bars x 22'-0" hkd.
6-#14 bars x 35'-0"
#4 bars x 36'-6"
#4 bars x 25'-6"
Note - Use std 90° hk both ends of all bars in outside face except #11 bottom bar which will be bent to miss Col steel & top bar which is bent as shown.
4-#14 bars x 16'-0"
8-#14 bars x 36'-6"
#4 stirrups
3'-0"
6'-0"

SEC. F-F
Scale 1/4"=1'-0"

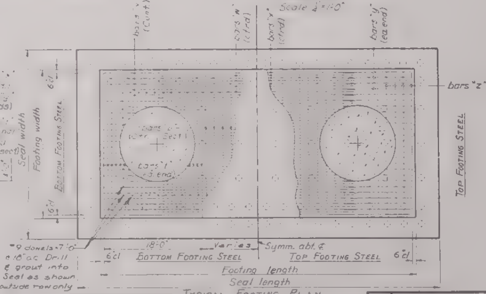


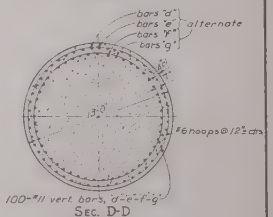
Bend bottom bar to miss col. steel
11'-0" Col. Dia.
6'-0" R
bar "k"
bar "j"
#6 hoops @ 12" ctrs.
50-#11 vert. bars, "k"-"j"
Std. 90° hk - out - See Note

SEC. B-B
Scale 1/4"=1'-0"



SEC. C-C
Scale 1/4"=1'-0"





SEC. D-D
Scale 1/4"=1'-0"

TYPICAL FOOTING PLAN
Scale: 1/8"=1'-0"

FOUNDATION DIMENSIONS

Pier No.	Elevations Bot. Seal	Elevations Top Ftg.	Seal Length	Seal Width	Seal Depth	Footing Length	Footing Width	Footing Depth
6	-73.0	-49.0	58'-0"	34'-0"	18'-0"	[illegible]	30'-0"	6'-0"
7	-79.0	-52.0	60'-0"	36'-0"	19'-0"	56'-0"	32'-0"	8'-0"
8	-82.0	-53.0	61'-0"	36'-0"	21'-0"	56'-0"	32'-0"	8'-0"
9	-85.0	-55.0	61'-0"	36'-0"	22'-0"	56'-0"	32'-0"	8'-0"
10	-83.0	-54.0	61'-0"	36'-0"	[illegible]	56'-0"	32'-0"	8'-0"
11	-83.0	-56.0	60'-0"	36'-0"	21'-0"	56'-0"	32'-0"	6'-0"
12	-74.0	-50.0	58'-0"	32'-0"	[illegible]	54'-0"	28'-0"	6'-0"

FOOTING REINFORCEMENT

Pier No.	bars "[illegible]" No	Size	Length	bars "[illegible]" No	Size	Length	bars "v" No	Size	Length	bars "w" No	Size	Length	bars "x" No	Size	Length	bars "[illegible]" No	Size	Length	bars "z" No	Size	Length	[illegible] dowels
6	54	[illegible]	[illegible]	11	#5	29'-6"	[illegible]	[illegible]	55'-0"	[illegible]	[illegible]	35'-0"	59	[illegible]	35'-0"	[illegible]	#5	[illegible]	[illegible]	#8	28'-0"	60
7	54	[illegible]	[illegible]	13	#5	31'-0"	[illegible]	#5	55'-0"	31	#5	35'-0"	[illegible]	#11	[illegible]	[illegible]	[illegible]	[illegible]-7	[illegible]	[illegible]	31'-0"	68
8	70	[illegible]	[illegible]	[illegible]	#5	31'-0"	[illegible]	#8	55'-0"	31	#8	[illegible]	[illegible]	#11	35'-0"	32	[illegible]	11'-7	38	#8	31'-0"	68
9	70	[illegible]	[illegible]	[illegible]	#5	31'-0"	[illegible]	[illegible]	55'-0"	31	#8	[illegible]	[illegible]	[illegible]	55'-0"	[illegible]	#5	[illegible]-7	38	[illegible]	31'-0"	68
10	[illegible]	[illegible]	[illegible]	[illegible]	#5	31'-0"	32	#8	55'-0"	31	#8	35'-0"	[illegible]	[illegible]	55'-0"	[illegible]	#5	[illegible]-7"	38	[illegible]	31'-0"	88
11	[illegible]	[illegible]	[illegible]	[illegible]	#5	31'-0"	32	#8	55'-0"	31	#8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	#5	[illegible]-7"	[illegible]	[illegible]	31'-0"	88
12	[illegible]	[illegible]	[illegible]	[illegible]	#5	27'-0"	28	#8	53'-0"	27	#8	35'-0"	55	#11	35'-0"	28	#5	10'-7"	37	#8	27'-0"	72

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ⅛"=1'-0" SHOULD BE READ 1/16"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED
BRIDGE ENGINEER
DESIGNED GJB
DRAWN GJB
CHECKED
CALC. BOOK

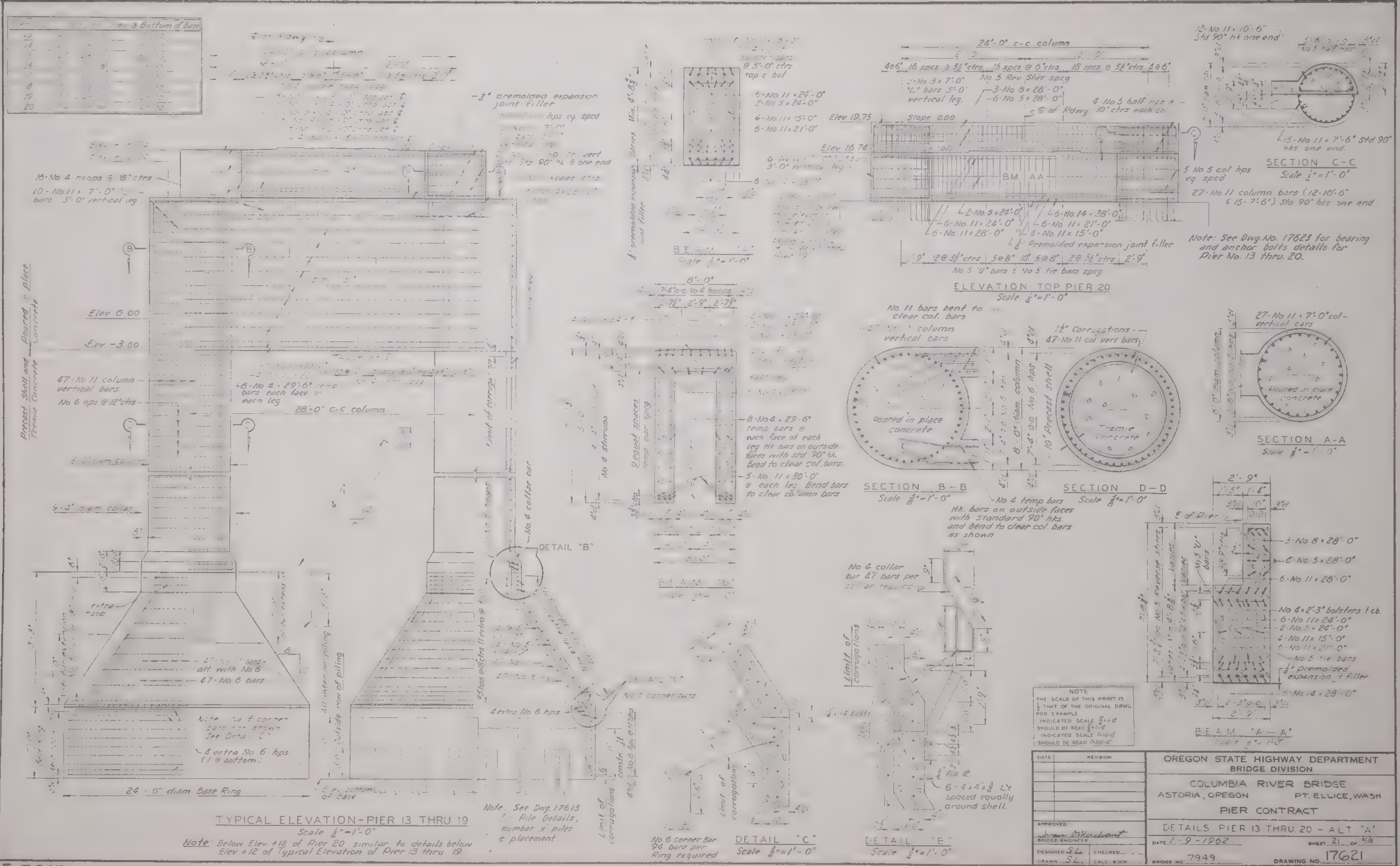
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS - PIERS NO. 6 THROUGH 12 - ALT. "B"

DATE 1-9-62
SHEET 20 OF 58
BRIDGE NO. 7949
DRAWING NO. 17620

APR 2 1962



TYPICAL ELEVATION-PIER 13 THRU 19

Scale ¼" = 1'-0"

Note Below Elev. +12 of Pier 20 similar to details below Elev. +12 of Typical Elevation of Pier 13 thru 19.

Note. See Dwg. 17613 for Pile Details, number of piles & placement

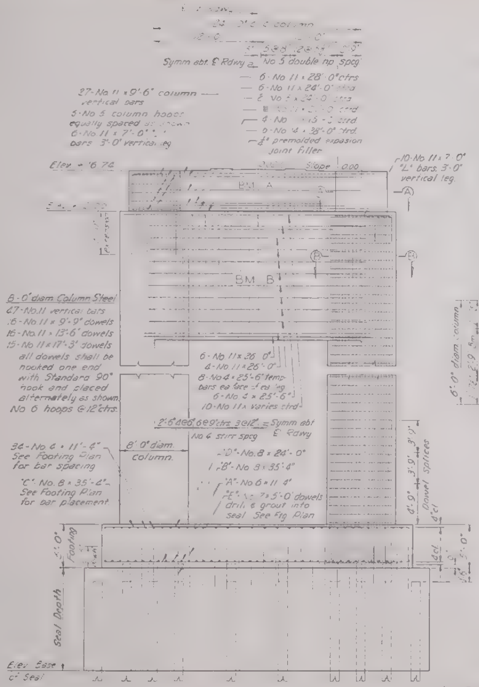
Note: See Dwg. No. 17623 for bearing and anchor bolts details for Pier No. 13 thru. 20.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED
Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED S.L. CHECKED
DRAWN S.L. CALC BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
DETAILS PIER 13 THRU. 20 - ALT "A"
DATE 1-9-1962 SHEET 21 OF 58
BRIDGE NO 7949 DRAWING NO. 17621

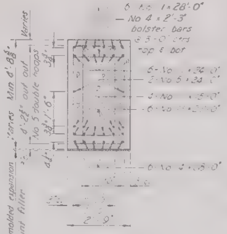


Symm abt ℄ Rdwy
No 5 double hp spcg
27-No 11 x 9'-6" column vertical bars
5-No 5 column hoops equally spaced as shown
6-No 11 x 7'-0" "L" bars 3'-0" vertical leg
6-No 11 x 28'-0" ctrs
6-No 11 x 24'-0" ctrd
1/2" premolded expansion joint filler
10-No 11 x 7'-0" "L" bars 3'-0" vertical leg
Elev + 16.74
Slope 0.00
BM A
BM B
8'-0" diam Column Steel
47-No 11 vertical bars
16-No 11 x 9'-9" dowels
16-No 11 x 13'-6" dowels
15-No 11 x 17'-3" dowels
all dowels shall be hooked one end with Standard 90° hook and placed alternately as shown
No 6 hoops @ 12" ctrs
6-No 11 x 26'-0"
4-No 11 x 26'-0"
8-No 4 x 25'-6" temp bars ea face of ea leg
6-No 4 x 25'-6"
10-No 11 x varies ctrd
2'-6" 4@6" 6@9" ctrs 3@12" = Symm abt ℄ Rdwy
No 4 stirr spcg
8'-0" diam. column
"D"-No 8 x 24'-0"
"B"-No 8 x 35'-4"
"A"-No 6 x 11'-4"
"E"-No 7 x 5'-0" dowels drill & grout into seal See Ftg Plan
34-No 4 x 11'-4" See Footing Plan for bar spacing
"C"-No 8 x 35'-4" See Footing Plan for bar placement
Dowel Splices
Footing
Seal Depth
Elev Base of Seal

Note: Details of Pier No 20 below Elevation +12.00 similar to details below Elevation +12.00 of Typical Elevation of Pier No 13 thru 19

TYPICAL ELEVATION - PIER NO 13 THRU 19

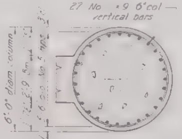
Scale 3/16" = 1'-0"



6-No 11 x 28'-0"
No 4 x 2'-3" bolster bars @ 3'-0" ctrs top & bot
No 5 double hoops
Min d' 8 3/4"
Varies
1/2" premolded expansion joint filler
2'-9"

BEAM "A"

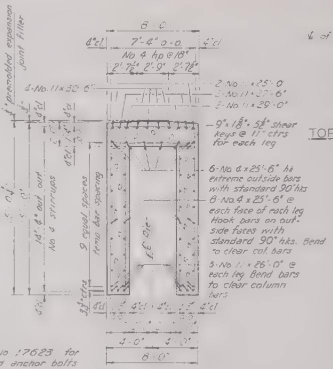
Scale 3/8" = 1'-0"



SECTION A-A

Scale 3/8" = 1'-0"

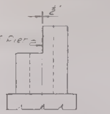
Note
See Dwg No 17623 for bearing and anchor bolts details for Pier No 13 thru 20.



1/2" premolded expansion joint filler
8'-0"
4"cl
7'-4" o-o
No 4 hp @ 18"
2'-7 1/2" 2'-9" 2'-7 1/2"
4-No 11 x 30'-6"
2-No 11 x 25'-0"
2-No 11 x 27'-6"
2-No 11 x 29'-0"
9" x 18 5/8" x 5 1/2" shear keys @ 11" ctrs for each leg
6-No 4 x 25'-6" hk extreme outside bars with standard 90° hks
8-No 4 x 25'-6" @ each face of each leg Hook bars on outside faces with standard 90° hks. Bend to clear col. bars
5-No 11 x 26'-0" @ each leg Bend bars to clear column bars
No 4 stirrups
9 equal spaces temp bar spacing
4'-0" 4'-0"
8'-0"

BEAM "B"

Scale 3/8" = 1'-0"

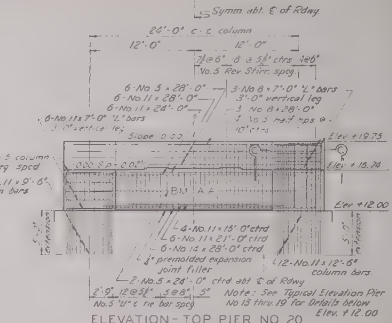


END VIEW
TOP OF PIER NO 20

Scale 3/16" = 1'-0"

5-No 5 column hps eq spcd.

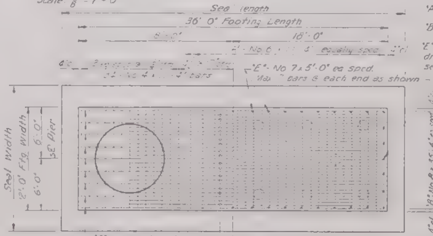
15-No 11 x 9'-6" column bars



Note: See Typical Elevation Pier No 13 thru 19 for Details below Elev. +12.00

ELEVATION - TOP PIER NO 20

Scale: 3/16" = 1'-0"



Note. See Dwg No 17612 for pile layout and loads for Pier No 13 thru 20

"D"-No 8 x 24'-0" placed as shown

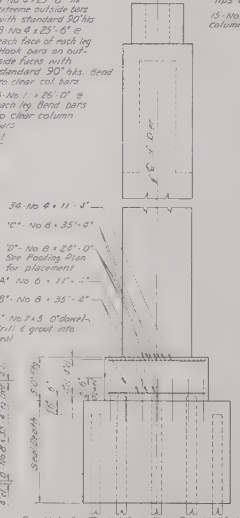
"C"-No 8 x 35'-4" placed as shown

Symm abt ℄ Rdwy

TOP-LAYER STEEL BOTTOM-LAYER STEEL

TYPICAL FOOTING PLAN

Scale 1/4" = 1'-0"

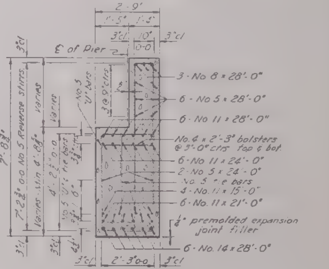


34-No 4 x 11'-4"
"C"-No 8 x 35'-4"
"D"-No 8 x 24'-0" See Footing Plan for placement
"A"-No 6 x 11'-4"
"B"-No 8 x 35'-4"
"E"-No 7 x 5'-0" dowel drill & grout into seal
8'-0" Dia
Seal Depth

See Note for Typical Elevation - Pier No 13 thru 19

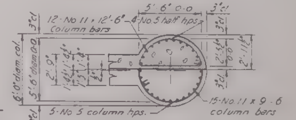
TYPICAL END VIEW
PIER NO 13 THRU 19

Scale 3/16" = 1'-0"



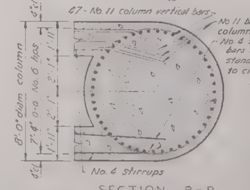
BEAM "A-A"

Scale 1/2" = 1'-0"



SECTION C-C

Scale: 1/4" = 1'-0"



No 11 bars bent to clear column vertical bars.

No. 4 temp. bars. Hook bars on outside faces with standard 90° hks and bent to clear col. bars as shown.

SECTION B-B

Scale 3/8" = 1'-0"

Piers		Seal Data				Footing Reinforcing Steel				
No	Station	Elev @ Base	Width	Length	Depth	A	B	C	D	E
13	144 + 48.00	– 70.00	17'-0"	40'-0"	17'-6"	38	33	9	16	48
14	145 + 98.00	– 67.00	17'-0"	40'-0"	17'-0"	38	33	9	16	48
15	147 + 48.00	– 62.00	16'-0"	39'-0"	16'-0"	36	[illegible]	8	[illegible]	46
16	148 + 98.00	– 58.00	15'-0"	39'-0"	15'-0"	35	29	8	14	45
17	150 + 48.00	– 55.00	15'-0"	39'-0"	14'-6"	34	29	8	14	44
18	[illegible]	– 50.00	15'-0"	39'-0"	[illegible]	34	28	8	14	44
19	[illegible]	[illegible]	15'-0"	39'-0"	[illegible]	32	26	7	12	42
20	[illegible]	[illegible]	15'-0"	39'-0"	12'-0"	32	26	7	12	42

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG FOR EXAMPLE
INDICATED SCALE 3/8"=1'-0" SHOULD BE READ 3/16"=1'-0"
INDICATED SCALE 1/4"=1'-0" SHOULD BE READ 1/8"=1'-0"

APR 2 1962

DATE	REVISION

APPROVED:
[illegible] Merchant
BRIDGE ENGINEER

DESIGNED S.L. CHECKED
DRAWN S L CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

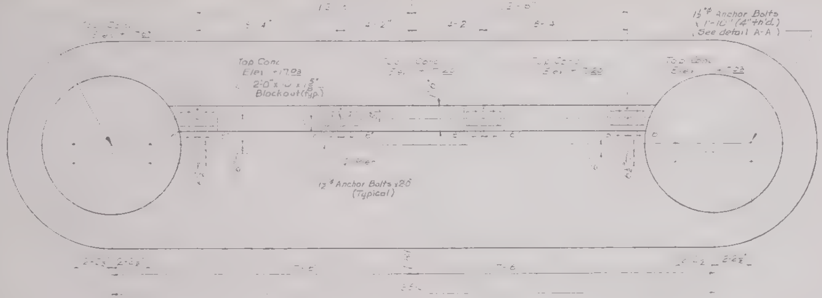
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.

PIER CONTRACT

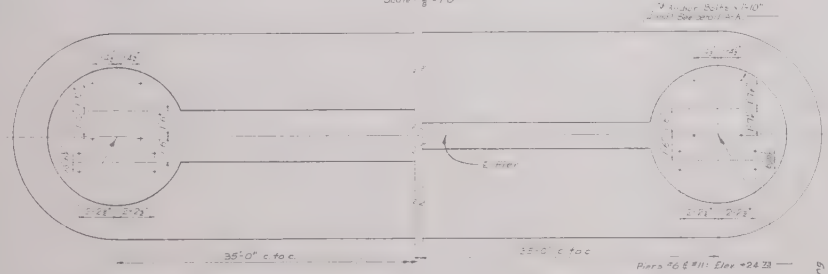
DETAILS - PIER NO 13 THRU 20 - ALT B

DATE 2-21-1962 SHEET 22 OF 58

BRIDGE NO. 7949 DRAWING NO 17622


1½"φ Anchor Bolts x 1'-10" (4" thd.) See detail A-A
Top Conc Elev. +17.02
2'-0" x 10" x 1⅝" Blockout (typ.)
1½"φ Anchor Bolts x 2'0" (Typical)
℄ Pier

PIER NO 12
Scale: ⅜" = 1'-0"



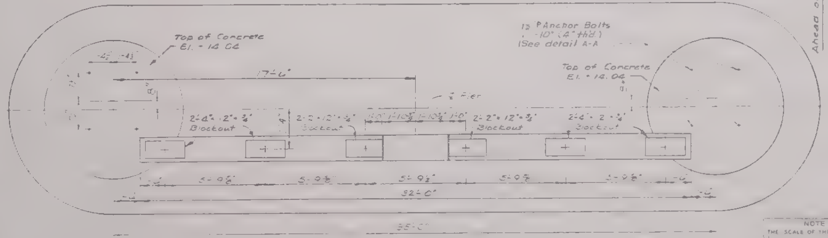
Piers #7 & #10: Elev. +35.42
Piers #8 & #9: Elev. +42.52

PIERS NO 7, 8, 9 & 10
Scale: ⅜" = 1'-0"

Piers #6 & #11: Elev. +24.73

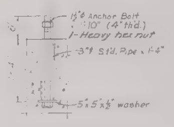
PIERS NO 6 & 11
Scale: ⅜" = 1'-0"

Ahead on Stationing

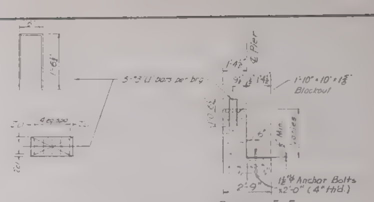

Top of Concrete El. + 14.04
1½"φ Anchor Bolts x 1'-10" (4" thd.) (See detail A-A)
Top of Concrete El. + 14.04
17'-6"
℄ Pier
2'-4" x 12" x ¾" Blockout
2'-2" x 12" x ¾" Blockout
2'-2" x 12" x ¾" Blockout
2'-4" x 12" x ¾" Blockout
5'-9½"
5'-9½"
5'-9½"
5'-9½"
5'-9½"
32'-0"
35'-0"

PIER NO 5
Scale: ⅜" = 1'-0"

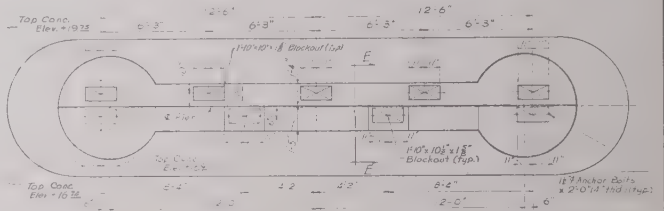
NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG. FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"



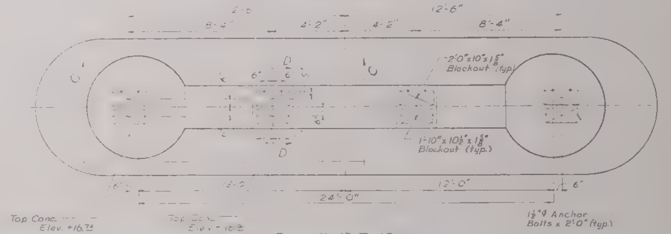
DETAIL A-A
Scale: 1" = 1'-0"


1'-6½"
5-#3 U bars per brg.
℄ Pier
1'-4½"
1'-10" x 10" x 1⅝" Blockout
2'-9"
1½"φ Anchor Bolts x 2'-0" (4" thd.)

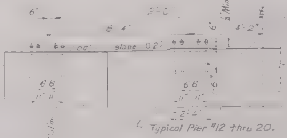
SECTION E-E
Scale: ⅜" = 1'-0"


Top Conc. Elev. +19.73
12'-6"
12'-6"
6'-3"
6'-3"
6'-3"
6'-3"
1'-10" x 10" x 1⅝" Blockout (typ.)
E
E
℄ Pier
1'-10" x 10½" x 1⅝" Blockout (typ.)
Top Conc. Elev. +16.72
8'-4"
4'-2"
4'-2"
8'-4"
2'-0"
6"
1½"φ Anchor Bolts x 2'-0" (4" thd.) (typ.)

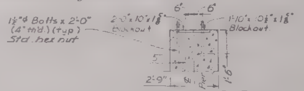
PIER NO. 20
Scale: ⅜" = 1'-0"


12'-6"
8'-4"
4'-2"
4'-2"
8'-4"
D
D
C
C
2'-0" x 10" x 1⅝" Blockout (typ.)
1'-10" x 10½" x 1⅝" Blockout (typ.)
12'-0"
24'-0"
6"
Top Conc. Elev. +16.72
1½"φ Anchor Bolts x 2'-0" (typ.)

PIERS NO 13 TO 19 INCL
Scale: ⅜" = 1'-0"



SECTION C-C
Scale: ⅜" = 1'-0"

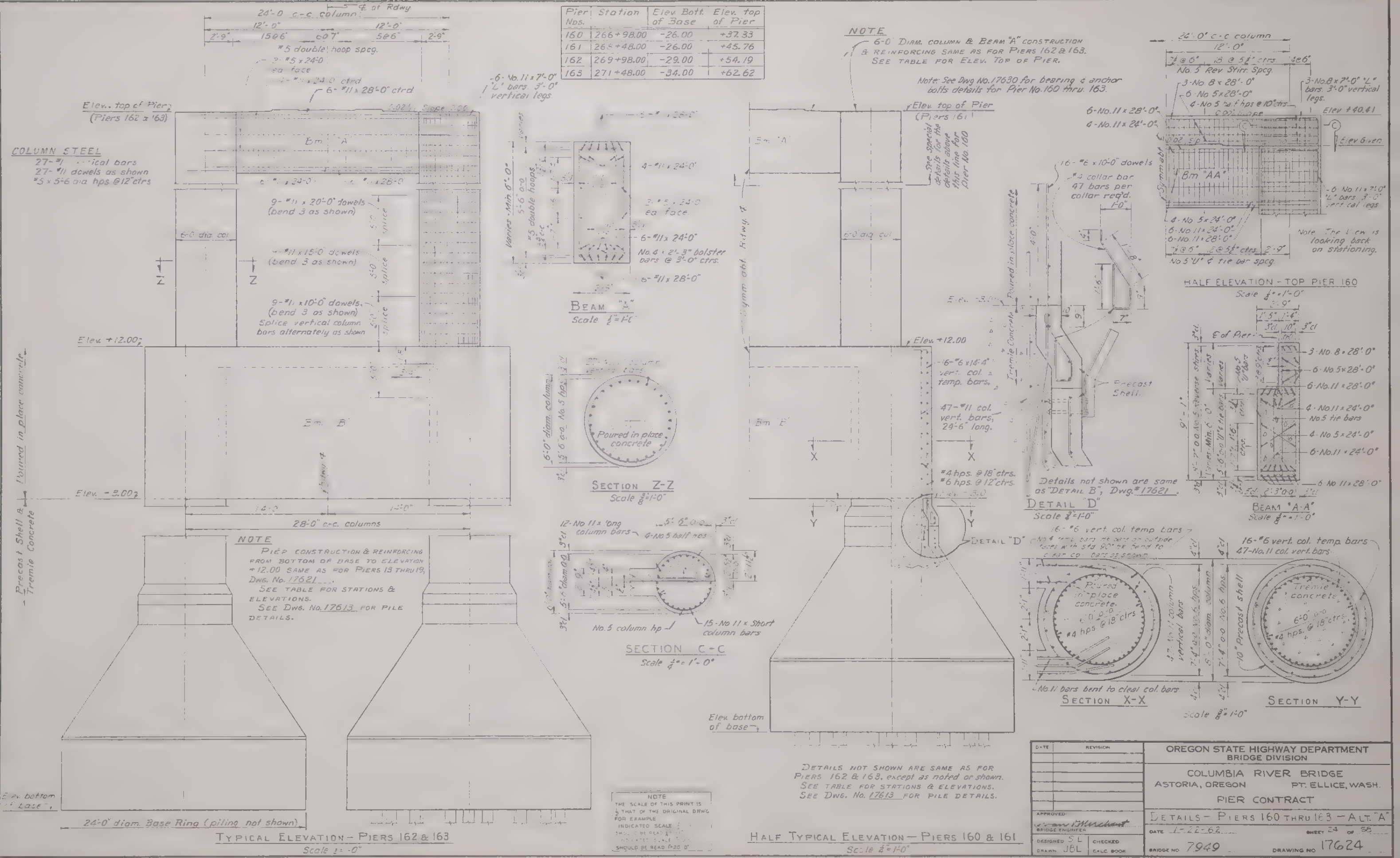

1½"φ Bolts x 2'-0" (4" thd.) (typ.) Std. hex nut
2'-0" x 10" x 1⅝" Blockout
1'-10" x 10½" x 1⅝" Blockout
6"
6"
2'-9"
℄ Pier
1'-6"

SECTION D-D
Scale: ⅜" = 1'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER
DESIGNED ___ CHECKED
DRAWN GJB CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
BEARING & ANCHOR BOLT DETAILS - ALT. "A" & "B"
DATE 1-8-62 PIER 5-20 SHEET 23 OF 58
BRIDGE NO. 7949 DRAWING NO. 17623



Pier Nos.	Station	Elev. Bott. of Base	Elev. top of Pier
160	266+98.00	-26.00	+37.33
161	268+48.00	-26.00	+45.76
162	269+98.00	-29.00	+54.19
163	271+48.00	-34.00	+62.62

NOTE

6'-0" DIAM. COLUMN & BEAM "A" CONSTRUCTION & REINFORCING SAME AS FOR PIERS 162 & 163. SEE TABLE FOR ELEV. TOP OF PIER.

Note: See Dwg No. 17630 for bearing & anchor bolts details for Pier No. 160 thru. 163.

NOTE

PIER CONSTRUCTION & REINFORCING FROM BOTTOM OF BASE TO ELEVATION +12.00 SAME AS FOR PIERS 13 THRU 19, DWG. No. 17621.

SEE TABLE FOR STATIONS & ELEVATIONS.

SEE DWG. No. 17613 FOR PILE DETAILS.

DETAILS NOT SHOWN ARE SAME AS FOR PIERS 162 & 163, except as noted or shown. SEE TABLE FOR STATIONS & ELEVATIONS. SEE DWG. No. 17613 FOR PILE DETAILS.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE [illegible]
SHOULD BE READ [illegible]
INDICATED SCALE [illegible]
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED: [illegible] Merchant
BRIDGE ENGINEER

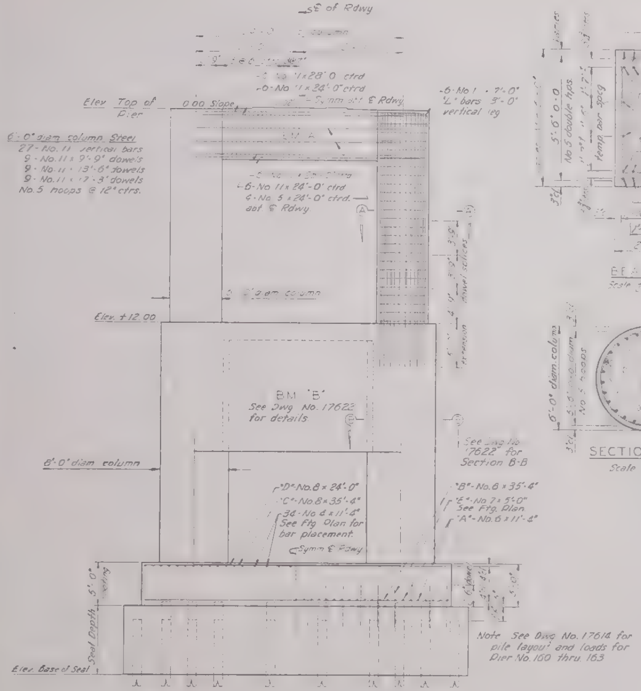
DESIGNED S L
DRAWN JBL
CHECKED
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS – PIERS 160 THRU 163 – ALT. "A"

DATE 1-22-62
SHEET 24 OF 58
BRIDGE NO 7949
DRAWING NO 17624

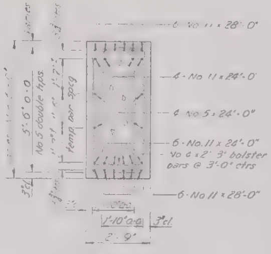


Note See Dwg No. 17614 for pile layout and loads for Pier No. 160 thru 163

Note Details of Pier No 160 below Elevation +12.00 similar to details below Elevation +12.00 of Typical Elevation of Pier No. 161 thru 163.

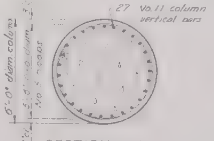
TYPICAL ELEVATION - PIER NO 161 THRU 163

Scale 3/16" = 1'-0"



BEAM "A"

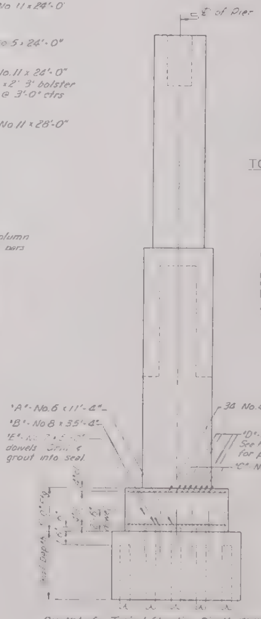
Scale 1/4" = 1'-0"



SECTION A-A

Scale 3/8" = 1'-0"

Note: See Dwg No. 17630 for bearing and anchor bolts details for Pier No 160 thru 163.

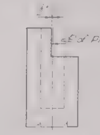

℄ of Pier
"A"-No. 6 x 11'-4"
"B"-No 8 x 35'-4"
"E"-No 7 x 5'-0" dowels. Drill & grout into seal.
34 No. 4 x 11'-4"
"D"-No 8 x 24'-0" See Footing Plan for placement.
"C"-No 8 x 35'-4"
Seal Depth

See Note for Typical Elevation-Pier No. 161 thru 163

TYPICAL END VIEW

PIER NO 161 THRU 163

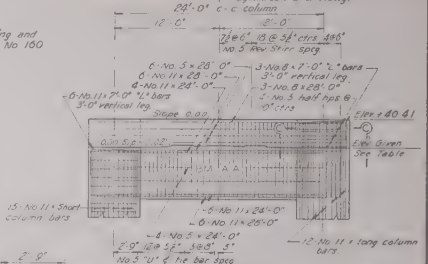
Scale 3/16" = 1'-0"



END VIEW

TOP OF PIER NO 160

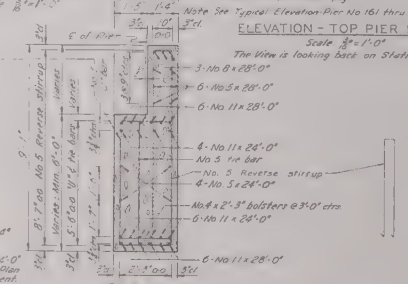
Scale 3/16" = 1'-0"



ELEVATION - TOP PIER NO. 160

Scale 3/8" = 1'-0"

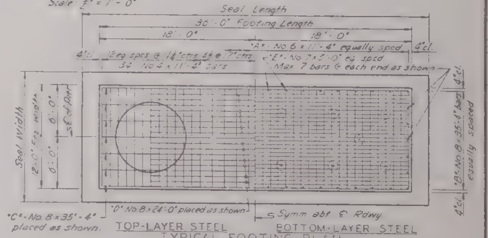
The View is looking back on Stationing.



Note See Typical Elevation-Pier No 161 thru 163 for Details not shown

BEAM A-A

Scale 3/8" = 1'-0"

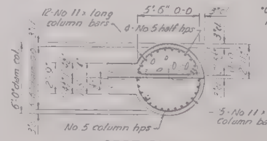


TOP-LAYER STEEL

BOTTOM-LAYER STEEL

TYPICAL FOOTING PLAN

Scale 3/16" = 1'-0"



SECTION C-C

Scale 1/4" = 1'-0"

PIERS			Seal Data				Footing Reinforcing Steel				
No	Stations	Elev @ Top	Elev @ Base	Width	Length	Depth	A	B	C	D	E
160	266+98.00	+37.33	-25.00	15'-0"	39'-0"	5'-0"	[illegible]	[illegible]		12	34
161	268+48.00	+45.76	-25.00	15'-0"	39'-0"	8'-0"	[illegible]	27	8	14	[illegible]
162	269+98.00	+54.19	-29.00	17'-0"	40'-0"	9'-0"	36	30	8	14	46
163	271+48.00	+62.62	-34.00	19'-0"	42'-0"	10'-0"	[illegible]	[illegible]	9	16	52

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/8"=1'-0"
SHOULD BE READ 3/16"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER

DESIGNED S.L. CHECKED
DRAWN S.L. CALC. BOOK

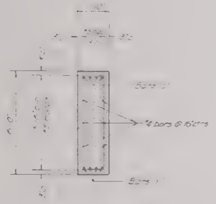
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

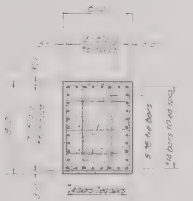
DETAILS - PIER NO 160 THRU 163 - ALT. B

DATE 2-27-1962 SHEET 25 OF 58

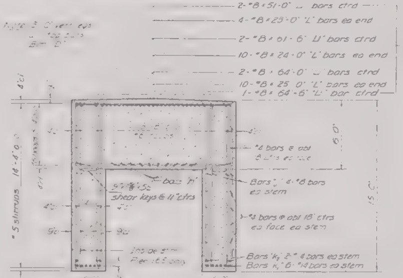
BRIDGE NO. 7949 DRAWING NO. 17625



BM 'A' - PIER 164
Scale 3/8"=1'-0"

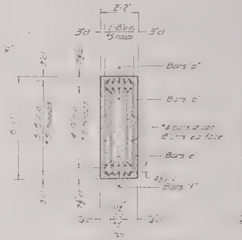


SECTION A-A PIER 164
Scale 1/4"=1'-0"

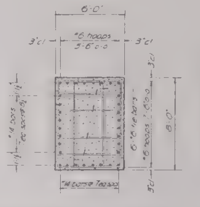

2-#8 x 51-0" bars ctrd
4-#8 x 23'-0" 'L' bars ea end
2-#8 x 61-6" 'U' bars ctrd
10-#8 x 24-0" 'L' bars ea end
2-#8 x 64'-0" bars ctrd
10-#8 x 25 0" 'L' bars ea end
1-#8 x 64'-6" 'U' bar ctrd
Bars 'g'
4'cl
#5 stirrups 14'-4" o.c.
#4 bars @ abt 8" ctrs ea face
6'-0"
bars 'h'
9 1/2"x 5 1/2" shear keys @ 11"ctrs
Bars 'j' 4-#8 bars ea stem
15'-0"
#4 bars @ abt 18" ctrs ea face ea stem
9cl
Inside stem Pier 165 only
Bars 'k2' 2-#4 bars ea stem
Bars 'k1' 6-#14 bars ea stem
4'cl

Note Use std 90° hook both ends of all bars in outside faces of Bm 'D' except Bars 'g' & 'h'

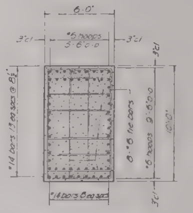
BM 'D' - PIERS 164 & 165
Scale 1/2"=1'-0"



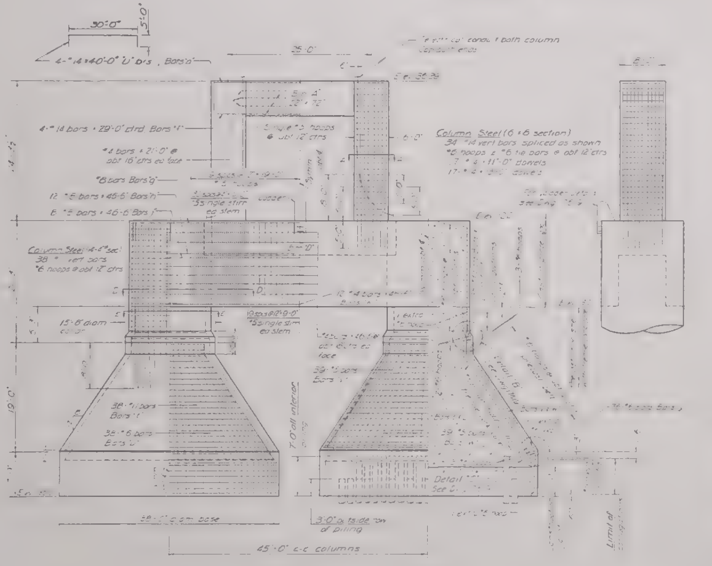
BMS 'A' & 'B' - PIER 165
Scale 3/8"=1'-0"



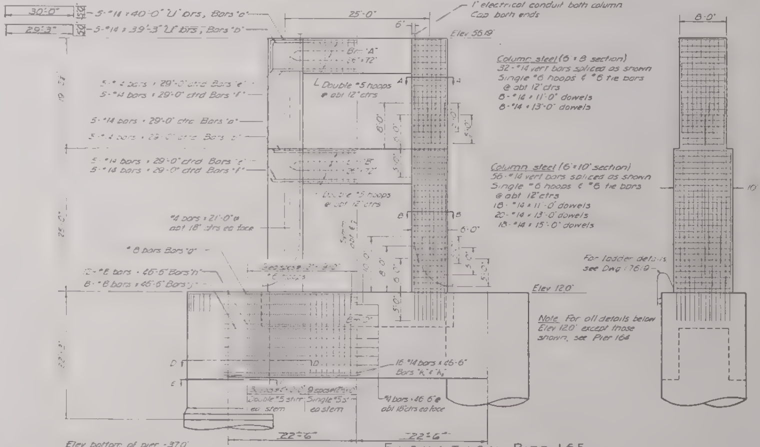
SECTION A-A PIER 165
Scale 1/4"=1'-0"



SECTION B-B PIER 165
Scale 1/4"=1'-0"

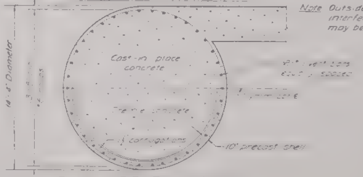


ELEVATION-PIER 164
Scale 1/8"=1'-0"


30'-0"
29'-3"
5-#14 x 40'-0" 'U' brs, Bars 'a'
5-#14 x 39'-3" 'U' brs, Bars 'b'
25'-0"
6'
1" electrical conduit both column Cap both ends
Elev 56.19
Bm 'A' 26" x 72"
5-#14 bars x 29'-0" ctrd Bars 'e'
5-#14 bars x 29'-0" ctrd Bars 'f'
Double #5 hoops @ abt 12" ctrs
5-#14 bars x 29'-0" ctrd Bars 'a'
5-#14 bars x 29'-0" ctrd Bars 'b'
5-#14 bars x 29'-0" ctrd Bars 'e'
5-#14 bars x 29-0" ctrd Bars 'f'
Bm 'B' 26" x 72"
Double #5 hoops @ abt 12" ctrs
#4 bars x 21'-0" @ abt 18" ctrs ea face
Symm abt ℄
#8 bars Bars 'g'
12-#8 bars x 46-6" Bars 'h'
8-#8 bars x 45-6" Bars 'j'
#6 hoops
Column steel (6' x 8' section)
32-#14 vert bars spliced as shown
Single #6 hoops & #6 tie bars @ abt 12" ctrs
8-#14 x 11'-0" dowels
8-#14 x 13'-0" dowels
Column steel (6' x 10' section)
56-#14 vert bars spliced as shown
Single #6 hoops & #6 tie bars @ abt 12" ctrs
18-#14 x 11'-0" dowels
20-#14 x 13'-0" dowels
18-#14 x 15'-0" dowels
6'-0"
8'-0"
10'-0"
For ladder details see Dwg 17619
Elev 12.0'
Note For all details below Elev 12.0' except those shown, see Pier 164
Bm 'D'
16 #14 bars x 46-6" Bars 'k1' & 'k2'
Double #5 stirr ea stem
9 spcs @ 12" 9'-0"
Single #5 s ea stem
#4 bars x 46 6" @ abt 18" ctrs ea face
22'-6"
22'-6"
Elev bottom of pier -37.0'

ELEVATION - PIER 165
Scale 1/8"=1'-0

SECTION D-D PIER 164 & 165



SECTION E-E PIERS 164 & 165
Scale 1/4"=1'-0"

Note Outside #14 bars of bm stem to be bent to avoid interference with col steel No #11 vert col bars may be cut off See Dwg 17627 for details.

NOTE
THE SCALE OF THIS PRINT IS
1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4"=1'-0"
SHOULD BE READ 3/8"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

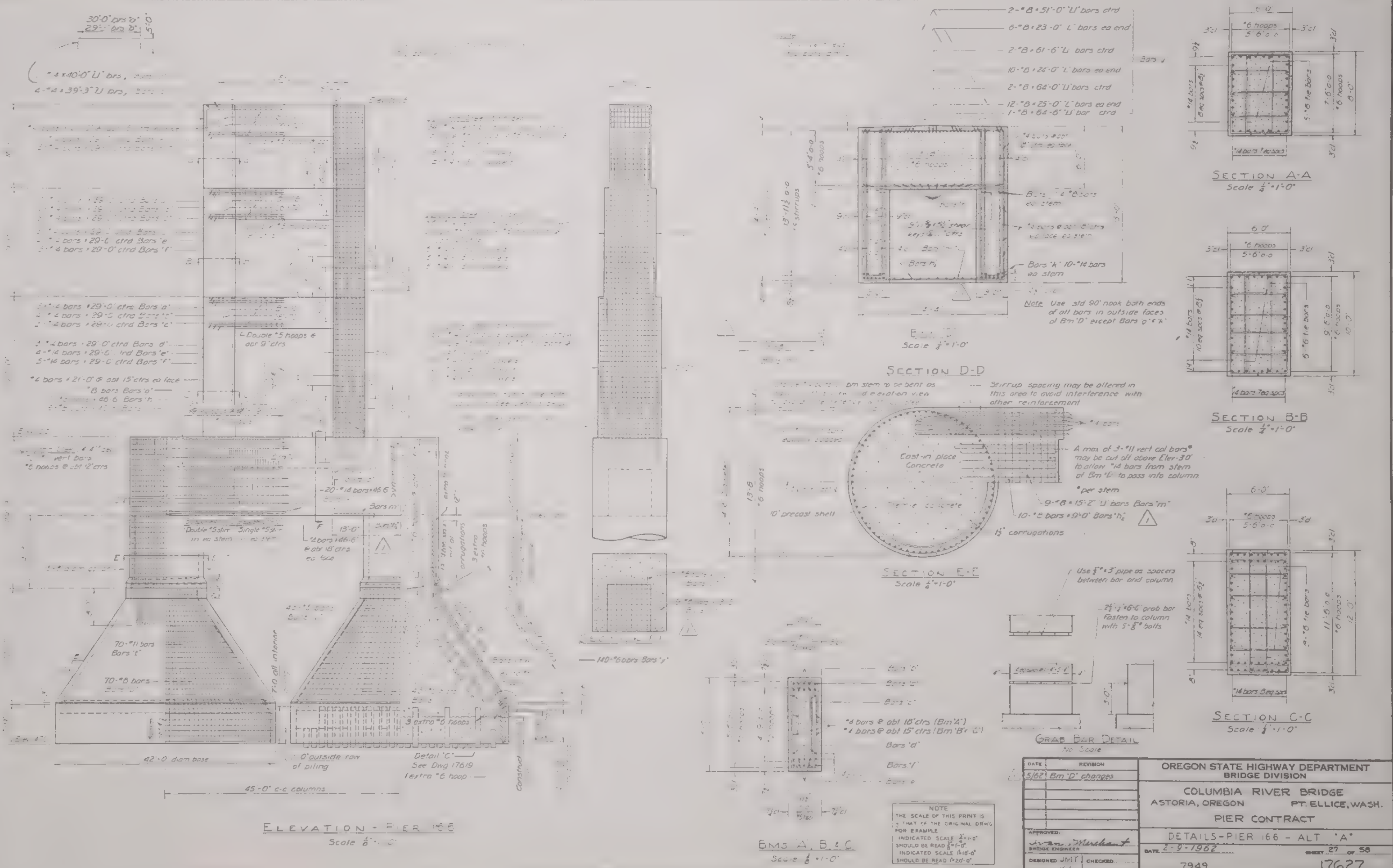
APPROVED:
Ivan Merchant
BRIDGE ENGINEER
DESIGNED MT CHECKED
DRAWN HA CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS-PIER 164 & 165 ALT "A"

DATE 1-9-1962
Revised 1-22-62
SHEET 26 OF 58
BRIDGE NO 7949
DRAWING NO. 17626



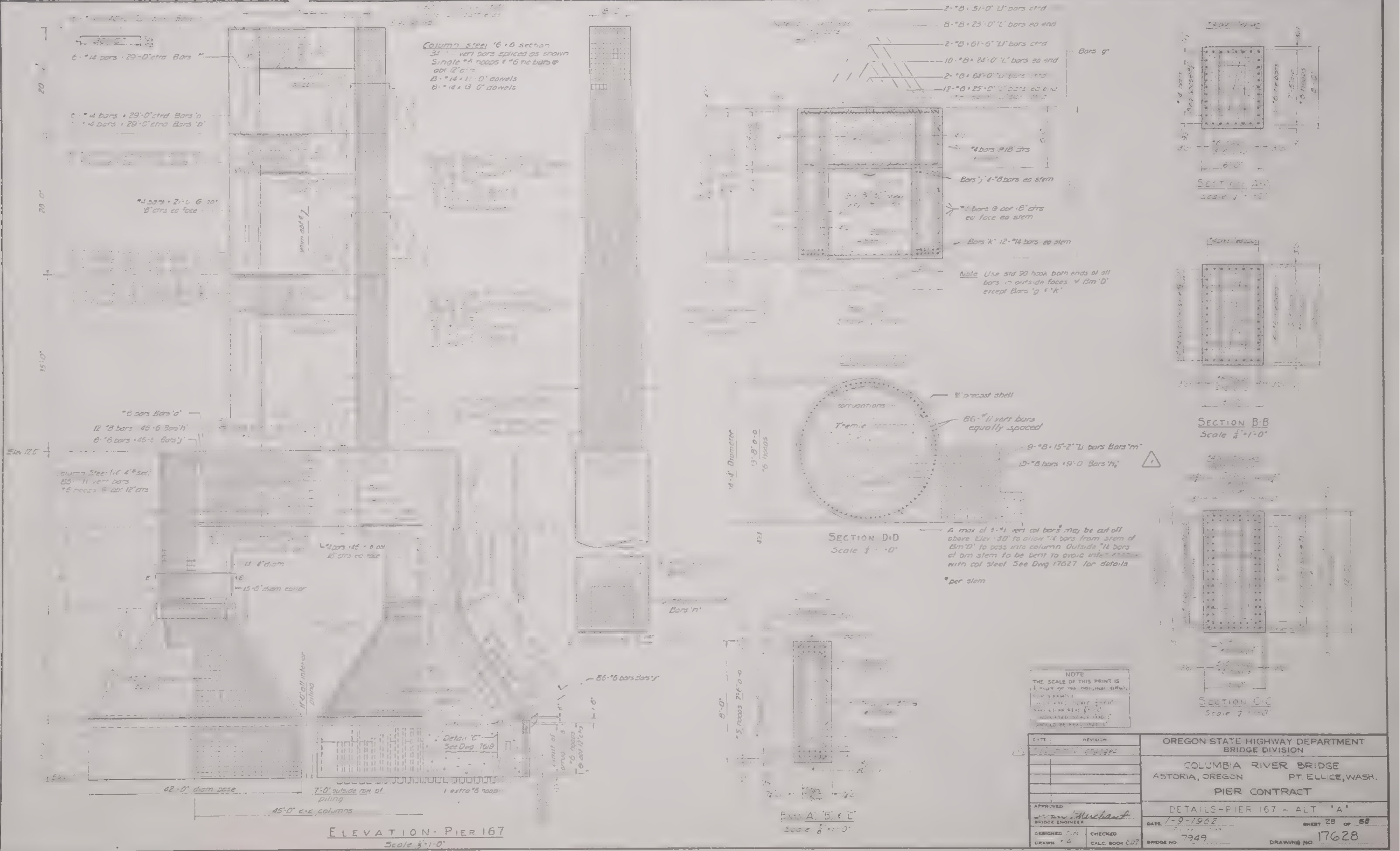
NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¼"=1'-0"
SHOULD BE READ ⅛"=1'-0".
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION
5/62	Bm 'D' changes

APPROVED:
Ivan Merchant
BRIDGE ENGINEER
DESIGNED JMT
DRAWN KL
CHECKED
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
DETAILS-PIER 166 - ALT "A"
DATE 2-9-1962
SHEET 27 OF 58
BRIDGE NO 7949
DRAWING NO 17627

APR 2 1992


6-#14 bars x 29'-0" ctrd Bars
6-#14 bars x 29'-0" ctrd Bars 'o'
#14 bars x 29'-0" ctrd Bars 'o'
#4 bars x 21'-0" @ 8" ctrs ea face
Column steel 16 x 8 section
31 vert bars spliced as shown
Single #6 hoops & #6 tie bars @ abt 12" ctrs
8-#14 x 11'-0" dowels
8-#14 x 13'-0" dowels
#8 bars Bars 'g'
12 #8 bars 46'-6" Bars 'h'
6-#6 bars x 45' Bars 'j'
Elev 12.0'
Column Steel 14'-4" sec
85-#11 vert bars
#6 hoops @ abt 12" ctrs
14'-6" diam
15'-0" diam collar
11'-0" all interior piling
Detail "C" See Dwg 7619
42'-0" diam base
7'-0" outside row of piling
1 extra #6 hoop
45'-0" c-c columns
86-#6 bars Bars 'r'
Bars 'n'
2-#8 x 51'-0" "U" bars ctrd
8-#8 x 23'-0" "L" bars ea end
2-#8 x 61'-6" "U" bars ctrd
10-#8 x 24'-0" "L" bars ea end
2-#8 x 63'-0" "U" bars ctrd
12-#8 x 25'-0" "L" bars ea end
Bars 'g'
#4 bars @ 18" ctrs
Bars 'j' 4-#8 bars ea stem
#4 bars @ abt 16" ctrs ea face ea stem
Bars 'k' 12-#14 bars ea stem
precast shell
corrugations
Tremie
66-#11 vert bars equally spaced
9-#8 x 15'-2" "L" bars Bars 'm'
10-#8 bars x 9'-0" Bars 'h'
16'-8" Diameter
13'-8" o-o
#6 hoops
8'-0"
#5 hoops 7'-6" o-o
Section A-A
Section B-B
Scale 1/4" = 1'-0"
Section C-C
Scale 1/4" = 1'-0"

Note Use std 90 hook both ends of all bars in outside faces of Bm 'D' except Bars 'g' & 'k'

A max of 4-#11 vert col bars* may be cut off above Elev -30' to allow #14 bars from stem of Bm 'D' to pass into column. Outside #14 bars of bm stem to be bent to avoid interference with col steel. See Dwg 17627 for details

*per stem

SECTION D-D
Scale 1/4" = 1'-0"

Bars A, B & C
Scale 3/8" = 1'-0"

ELEVATION - PIER 167
Scale 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE:
INDICATED SCALE 1/4" = 1'-0"
SHOULD BE READ 1/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION
	changes

APPROVED: Merchant
BRIDGE ENGINEER

DESIGNED
DRAWN
CHECKED
CALC. BOOK 607

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

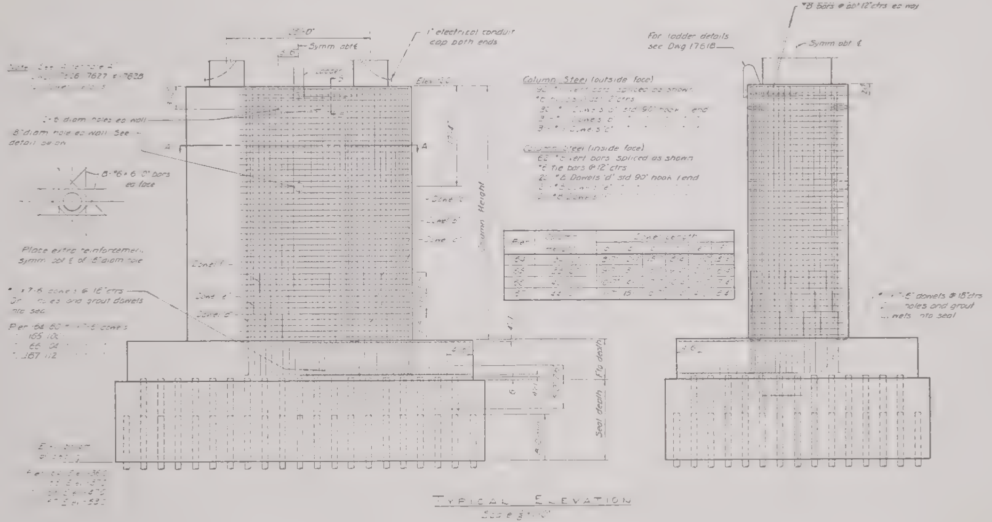
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.

PIER CONTRACT

DETAILS - PIER 167 - ALT 'A'

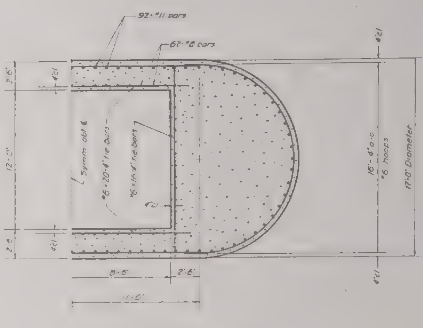
DATE 1-9-1962
SHEET 28 OF 58
BRIDGE NO. 7949
DRAWING NO. 17628

APR 2 1962

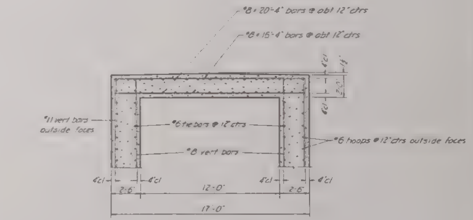

19'-0"
Symm abt ℄
1" electrical conduit cap both ends
Ladder
Elev 12.0
2-6 diam holes ea wall
8" diam hole ea wall See detail shown
8-#6 x 6'-0" bars ea face
Place extra reinforcement symm abt ℄ of 8" diam hole
Pier 164 60
165 100
166 104
167 112
A
Zone 'f'
Zone 'e'
Zone 'd'
Zone 'c'
Zone 'b'
Zone 'a'
Column Height
Ftg depth
Seal depth
Column Steel (outside face)
#6 Dowels 'd' std 90° hook 1 end
Column Steel (inside face)
62 #8 vert bars spliced as shown
#6 Tie bars @ 12" ctrs
22 #6 Dowels 'd' std 90° hook 1 end
For ladder details see Dwg 17618
#8 bars @ abt 12" ctrs ea way
Symm abt ℄
#6 dowels @ 18" ctrs
holes and grout dowels into seal

TYPICAL ELEVATION
Scale ⅛" = 1'-0"

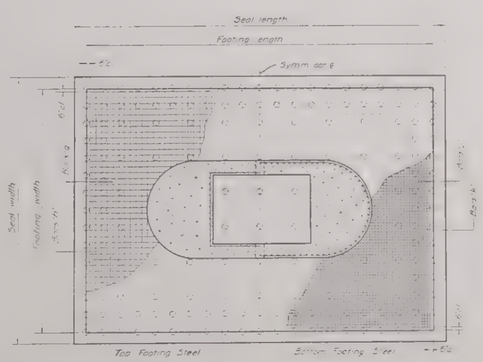
Pier	Column Height	Zone Length					
164	[illegible]	[illegible]	[illegible]	15	[illegible]	[illegible]	[illegible]
165	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
166	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
167	44	[illegible]	15	[illegible]	[illegible]	[illegible]	[illegible]



SECTION A-A
Scale ¼" = 1'-0"


#8 x 20'-4" bars @ abt 12" ctrs
#6 x 16'-4" bars @ abt 12" ctrs
#11 vert bars outside faces
#6 tie bars @ 12" ctrs
#8 vert bars
#6 hoops @ 12" ctrs outside faces
4"cl
2'-6"
12'-0"
17'-0"

SECTION B-B
Scale ¼" = 1'-0"



TYPICAL FOOTING PLAN
Scale ⅛" = 1'-0"

Pier	Seal Size			Footing Size			No. of Piles
	Length	Width	Depth	Length	Width	Depth	
164	[illegible]	34'-[illegible]	[illegible]	45'-0"	30'-0"	4'-[illegible]	[illegible]
165	39'-[illegible]	41'-[illegible]	[illegible]	53'-[illegible]	[illegible]	5'-0"	28
166	6[illegible]'-0"	43'-0"	15'-[illegible]	57'-0"	39'-0"	6'-0"	152
167	63'-0"	46'-0"	4'-0"	60'-0"	42'-0"	7'-0"	162

Foundation Dimensions

Pier	Top Steel								Bottom Steel							
	Bars "g"				Bars "h"				Bars "j"				Bars "k"			
	No	Size	Length	Spacing	No	Size	Length	Spacing	No	Size	Length	Spacing	No	Size	Length	Spacing
164	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12" ctrs	93	[illegible]	33'-0"	6" ctrs	67	#8	51'-0"	5" ctrs
165	59	#9	40'-0"	12" ctrs	41	#9	5[illegible]'-0"	12" ctrs	100	#11	40'-0"	7" ctrs	69	#11	58'-0"	7" ctrs
166	61	#9	42'-0"	12" ctrs	43	#9	[illegible]	12" ctrs	104	#11	42'-0"	7" ctrs	85	#11	60'-0"	6" ctrs
167	64	#9	45'-0"	12" ctrs	46	#9	63'-0"	12" ctrs	127	#11	45'-0"	5" ctrs	91	#11	63'-0"	6" ctrs

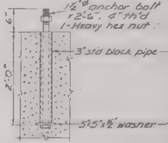
Footing Reinforcement

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

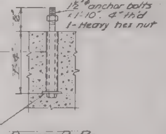
DATE	REVISION

APPROVED: Ivan Merchant
BRIDGE ENGINEER
DESIGNED JMT CHECKED
DRAWN KA CALC. BOOK

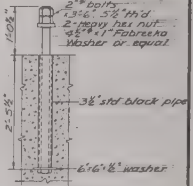
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
DETAILS PIER 164 TO 167 - ALT 'B'
DATE Feb. 26, 1962 SHEET 29 OF 58
BRIDGE NO. 7949 DRAWING NO. 17629



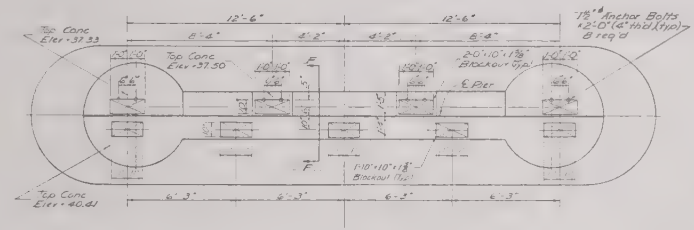
DETAIL A-A



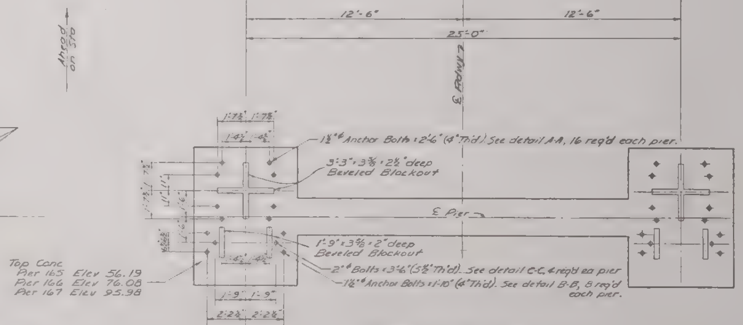
DETAIL B-B
Scale 1"=1'-0"

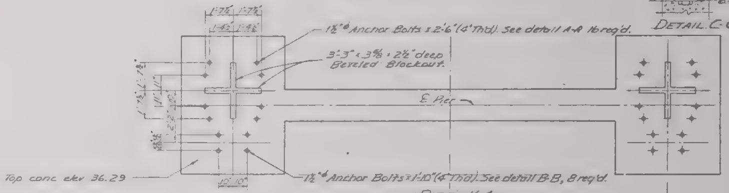

2"ф bolts x3'-6". 5½" th'd. 2-Heavy hex nut 4½"ф x1" Fabreeka Washer or equal
1'-0½"
2'-5½"
3½" std black pipe
6"x6"x½" washer

DETAIL C-C

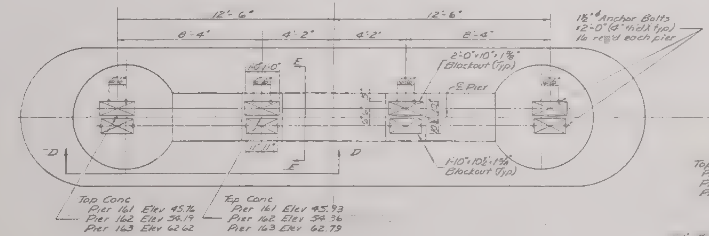


PIER No 160
Scale ⅜"=1'-0"


℄ Rdwy
Ahead on Sta
12'-6"
12'-6"
25'-0"
℄ Rdwy
1'-7⅞"
1'-7⅞"
1½"ф Anchor Bolts x2'-6" (4" Th'd) See detail A-A, 16 req'd each pier.
3'-3"x3⅝x2½" deep Beveled Blockout
℄ Pier
1'-9"x3⅝x2" deep Beveled Blockout
2"ф Bolts x3'-6" (5½" Th'd). See detail C-C, 4 req'd ea pier
1½"ф Anchor Bolts x1'-10" (4" Th'd). See detail B-B, 8 req'd each pier.
Top Conc Pier 165 Elev 56.19 Pier 166 Elev 76.08 Pier 167 Elev 95.98
1'-9"
1'-9"
2'-2½"
2'-2½"

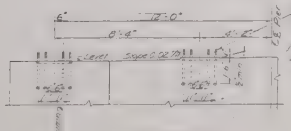

1'-7⅞"
1'-7⅞"
1½"ф Anchor Bolts x2'-6" (4" Th'd). See detail A-A 16 req'd.
3'-3"x3⅝x2½" deep Beveled Blockout.
℄ Pier
Top conc elev 36.29
10" 10"
1½"ф Anchor Bolts x1'-10" (4" Th'd). See detail B-B, 8 req'd.

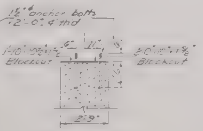
PIER 164
Scale ⅜"=1'-0"

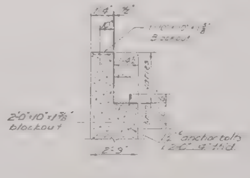

12'-6"
12'-6"
8'-4"
4'-2"
4'-2"
8'-4"
1½"ф Anchor Bolts x2'-0" (4" th'd.) (typ) 16 req'd each pier
E
E
2'-0"x10"x1⅜" Blockout (Typ)
℄ Pier
D
D
1'-10"x10½"x1⅜" Blockout (Typ)
Top Conc Pier 161 Elev 45.76 Pier 162 Elev 54.19 Pier 163 Elev 62.62
Top Conc Pier 161 Elev 45.93 Pier 162 Elev 54.36 Pier 163 Elev 62.79

PIER No 161, 162, & 163
Scale ⅜"=1'-0"

PIER 165, 166, & 167
Scale ⅜"=1'-0"







SECTION D-D

SECTION E-E

SECTION F-F

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRW'G
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0".
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED:
Bridge Engineer
BRIDGE ENGINEER

DESIGNED .... CHECKED ....
DRAWN W.A.T. CALC. BOOK ....

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.

PIER CONTRACT

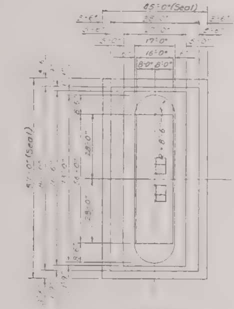
BEARING & ANCHOR BOLT DETAILS
PIER 160 - 167 ALT. A & B

DATE Feb. 16, 1962 SHEET 30 OF 58

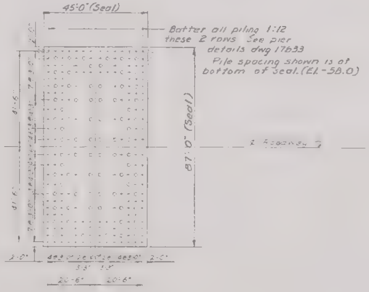
BRIDGE NO 7949 DRAWING NO. 17630

APR 2 1962

Note:
248 timber piles
Piles marked O to be cut off 6' above top of seal Balance of piling to extend 8'-0" min. into seal
Max pile load = 41 T/pile
Load shown is 0.8 of actual pile load for Group IIA loading
Piling shall be driven for a basic design load of 41 Ton

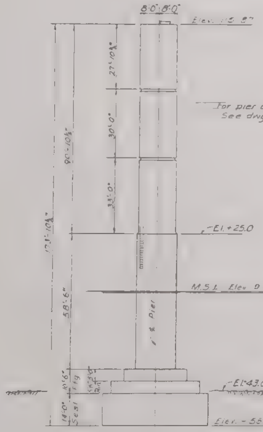


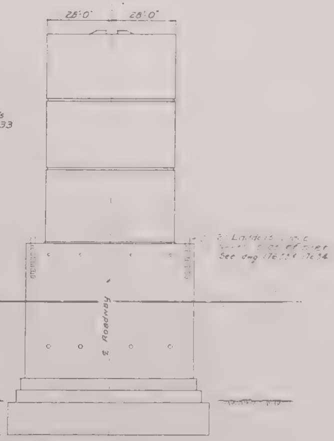
PLAN



45'-0" (Seal)
Batter all piling 1:12 these 2 rows See pier details dwg 17633
Pile spacing shown is at bottom of seal. (El. -58.0)
87'-0" (Seal)
℄ Roadway
20'-6" 20'-6"

PILE PLAN



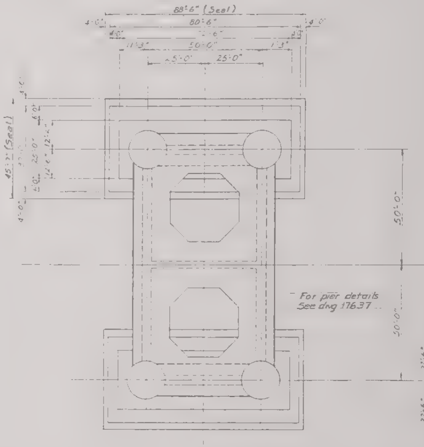


Piling not shown in elevation

END ELEVATION

FRONT ELEVATION

PIER 168
Scale: 1" = 20'



℄ Pier Sta.293+33.0

PLAN

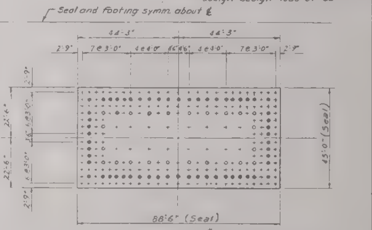
Scale 1" = 20'

Pile Loads	Loading	Group I	Group IIA Max.	Group IIA Min.	Group IIB Max.	Group IIB Min.	Group VA Max.	Group VA Min.	Group VB Max.	Group VB Min.	Group VC Max.	Group VC Min.
	"D"	44 Ton	44	+44	44	+44	44	+44	44	+44	44	+44
	"L"	1.6	-	-	-	-	-	-	-	-	-	-
	"S.F."	1.6	1.6	-1.6	1.6	-1.6	1.6	-1.6	1.6	-1.6	1.6	-1.6
	"W"	-	27.3	-29.3	45.3	-48.8	27.3	-29.3	45.3	-48.8	73.2	-73.2
	Twr. Twist	-	2.9	+2.9	4.9	+4.9	2.9	+2.9	4.9	+4.9	7.3	+7.3
	"T"	-	-	-	-	-	+8.2	-8.2	+8.2	-8.2	4.1	-4.1
	Total	+47.2T	+75.8T	+16T	+95.8T	-1.5T	+84T	+7.8T	+104T	-9.7T	130T	-27.6T

Minus sign indicates uplift

Group IIA - Wind = 90 lb/□'
Group IIB - Wind = 150 lb/□'
Group VA = Group IIa + Temp.
Group VB = Group IIb + Temp.
Group VC - Wind = 225 lb/□' + ½ T

Piling shall be driven for a basic design design load of 65 Ton

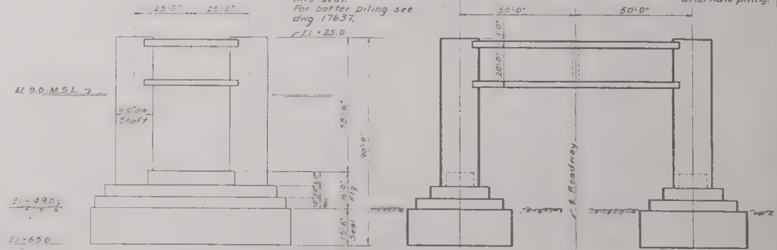


Note
Piles marked ■ shall extend 6" above top of seal.
Piles marked ● shall extend 4'-6" above top of seal. (See dwg. 17637)
Piles marked + shall extend 10'-0" min. into seal.
For batter piling see dwg 17637.

264-#14 BP 73 Piles at each seal.
Pile Spacing shown @ bottom of seal (El. -65.0)

PILE PLAN

*NOTE: See Dwg. #17639 for welded steel alternate piling.



Piling not shown

ELEVATIONS

PIER 169

SCALE: 1" = 20'

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED
BRIDGE ENGINEER

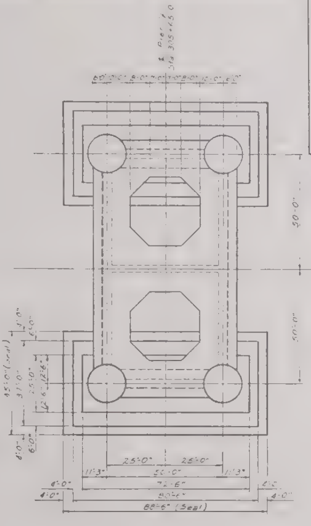
DESIGNED J. A.
DRAWN M. F.
CHECKED
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

PLAN & ELEVATION, PILE LAYOUT-PIER 168-169

DATE 1-9-1962
SHEET 31 OF 56
BRIDGE NO 7949
DRAWING NO. 17631



PLAN

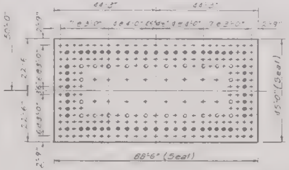
Pile Loads											
Loading	Group I	Group IIA		Group IIB		Group VA		Group VB		Group VC	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
"D"	+42 Ton	+42	+42	+42	+42	+42	+42	+42	+42	+42	+42
"L"	+1.6										
"S.F."	+1.6	+1.6	-1.6	+1.6	-1.6	+1.6	-1.6	+1.6	-1.6	+1.6	-1.6
"W"		+26.9	-26.9	+44.7	-45.1	+26.9	-26.9	+44.7	-45.1	+72.1	-72.1
Twr. Twist		+2.9	+2.9	+4.8	+4.8	+2.9	+2.9	+4.8	+4.8	+7.2	+7.2
"T"						+8.2	-8.2	+8.2	-8.2	+4.1	-4.1
Total	+45.2 Ton	+73.4	+14.4	+93.1	-2.9	+81.6	+8.2	+101	-11.1	+127	-28.6

- sign indicates uplift on pile.

Group IIA - Wind = 90 lb/□'
Group IIB - Wind = 150 lb/□'
Group VA = Group IIa + Temp.
Group VB = Group IIb + Temp.
Group VC = Wind = 225 lb/□' + ½ Temp.

Note:
Piles marked ○ shall extend thru seal and 6" into footing.
Piles marked + shall extend 10'-0" min into seal.
Piles marked ● also extend 4'6" above top of seal.
(See dwg 17637 & 17638)
For battered piling see dwg 17637
Piling shall be driven for the basic design load of 65 Ton

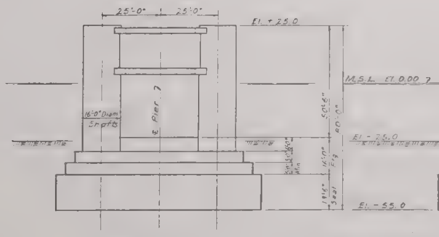
Seal and Footing symm. about ℄



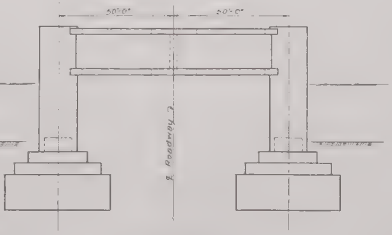
PILE PLAN

264-*14 BP 73 piles at each seal.
Pile spacing shown at el. -55.0
*NOTE: See Dwg. #17639 for welded steel alternate piling.

For pier details See dwg 17638



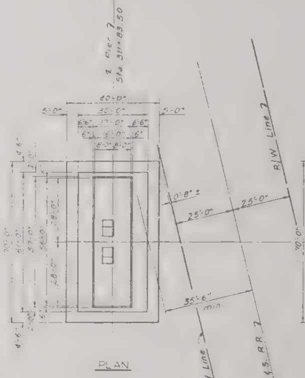
END ELEVATION



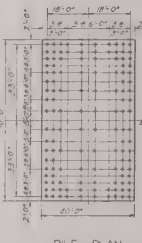
FRONT ELEVATION

Piling not shown in elevation

PIER 170
Scale: 1" = 20'

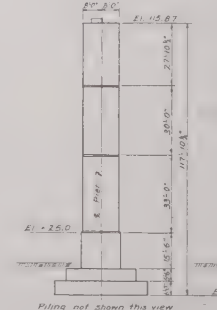


PLAN



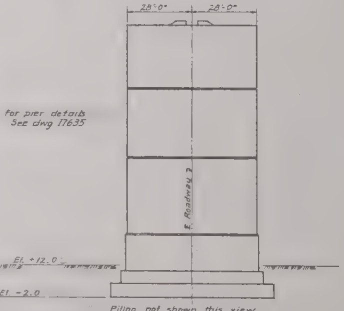
PILE PLAN

Note: 14"
128-14" octagonal prestressed concrete piles. (fc = 5000 p.s.i.)
All piles extend 1'-0" into footing.
Max. pile load = 57.5 T/pile.
Load shown is 0.8 of actual pile load for Group IIA loading.
Piling shall be driven for the basic design load of 57.5 Ton



Piling not shown this view
END ELEVATION

For pier details See dwg 17635



Piling not shown this view
FRONT ELEVATION

PIER 171
Scale: 1" = 20'

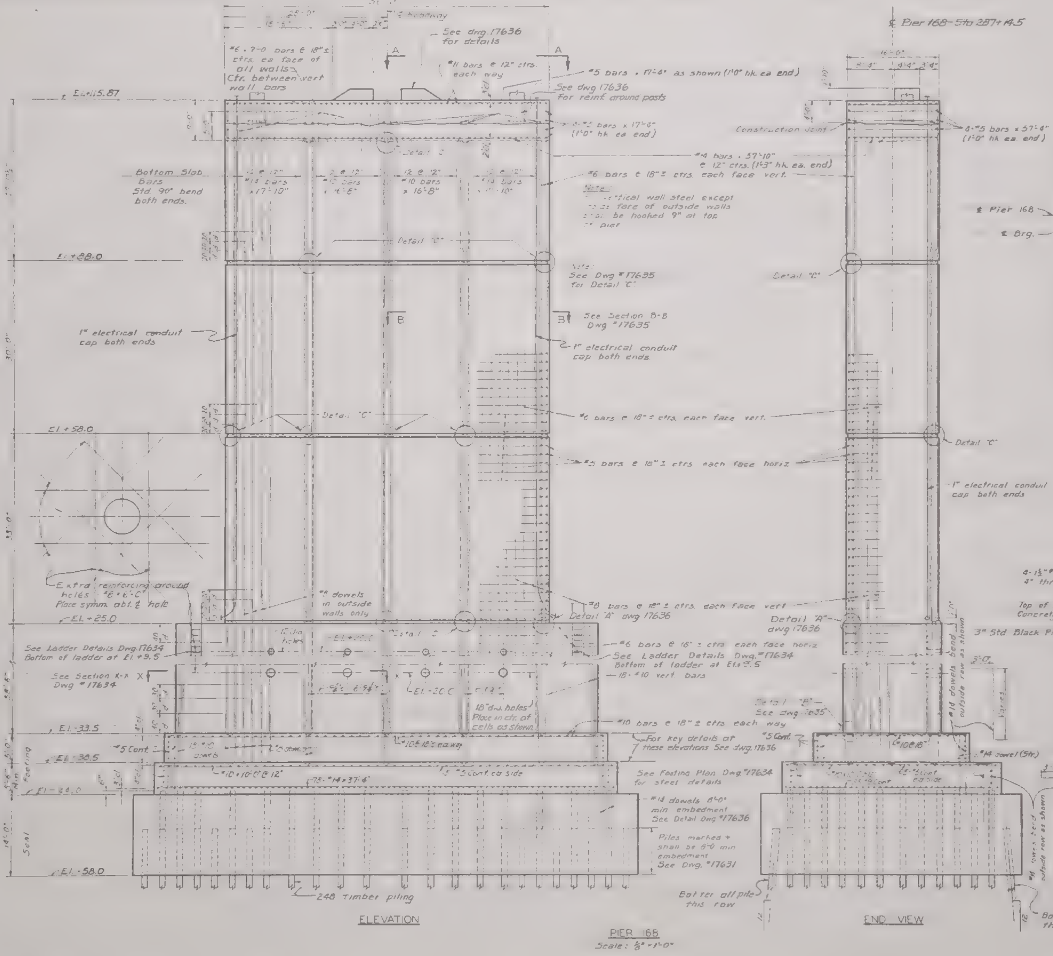
NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION
5-8-62	Piling size 12" to 14"

APPROVED: Merchant
BRIDGE ENGINEER
DESIGNED J.A.
DRAWN M.K.
CHECKED
CALC. BOOK

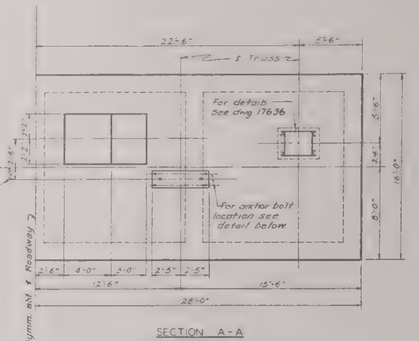
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
PLAN & ELEVATION, PILE LAYOUT - PIER 170-171
DATE 1-9-1962
SHEET 32 OF 58
BRIDGE NO. 7949
DRAWING NO. 17632

APR 2 1962
MAR 5 1962

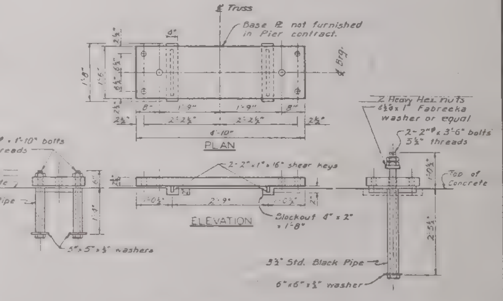


56'-0"
28'-0"
16'-5"
℄ Roadway
See dwg. 17636 for details
#6 . 7'-0 bars @ 18" ± ctrs. ea face of all walls. Ctr. between vert wall bars
A
#11 bars @ 12" ctrs. each way
#5 bars . 17'-4" as shown (1'0" hk. ea end)
See dwg 17636 For reinf. around posts
El. +115.87
8-#5 bars x 17'-4" (1'-0" hk ea end)
Detail "C"
#14 bars . 57'-10" @ 12" ctrs. (1'-3" hk. ea. end)
Bottom Slab Bars Std. 90° bend both ends.
12 @ 12"
#14 bars x 17'-10"
#10 bars x 16'-8"
#6 bars @ 18" ± ctrs each face vert.
Note: vertical wall steel except at face of outside walls shall be hooked 9" at top of pier
El. +88.0
Note: See Dwg #17635 for Detail "C"
B
See Section B-B Dwg #17635
1" electrical conduit cap both ends
30'-0"
El. +58.0
33'-0"
Extra reinforcing around holes #6 x 6'-0" Place symm. abt. ℄ hole
#8 dowels in outside walls only
#8 bars @ 18" ± ctrs each face vert
Detail "A" dwg 17636
El. +25.0
12" dia holes
#6 bars @ 16" ± ctrs each face horiz
See Ladder Details Dwg. 17634 Bottom of ladder at El. +9.5
18-#10 vert bars
See Section X-X Dwg #17634
X
El. -20.0
18" dia holes Place in ctr. of cells as shown.
#10 bars @ 18" ± ctrs each way
El. -33.5
#5 Cont.
For key details at these elevations See dwg. 17636
#10 @ 18" ± ea way
El. -38.5
Footing
#10 x 10'-0" @ 12"
78-#14 x 37'-4"
#5 Cont. ea side
See Footing Plan Dwg #17634 for steel details
El. -44.0
#14 dowels 8'-0" min embedment See Detail Dwg #17636
14'-0"
Seal
Piles marked + shall be 8'-0" min embedment See Dwg. #17631
El. -58.0
248 Timber piling
Batter all pile this row
ELEVATION
℄ Pier 168 - Sta 287+14.5
16'-0"
5'-4"
4'-4"
3'-4"
Construction Joint
8-#5 bars x 57'-4" (1'-0" hk ea. end)
Detail "C"
1" electrical conduit cap both ends
Detail "A" dwg 17636
#14 dowels bend outside row as shown
5'-0"
Varies
Detail "B" See dwg 17635
#5 Cont.
#10 @ 18"
#14 dowel (Str.)
#5 Cont ea side
3'-0"
13'-2"
Batter all pile this row
12
END VIEW

PIER 168
Scale: 1/8" = 1'-0"



SECTION A-A
Scale: 1/8" = 1'-0"



ANCHOR BOLT DETAILS
PIERS 168 & 171
Scale: 3/4" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRW'G
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan Merchant
BRIDGE ENGINEER

DESIGNED J.A. CHECKED
DRAWN M.K. CALC. BOOK

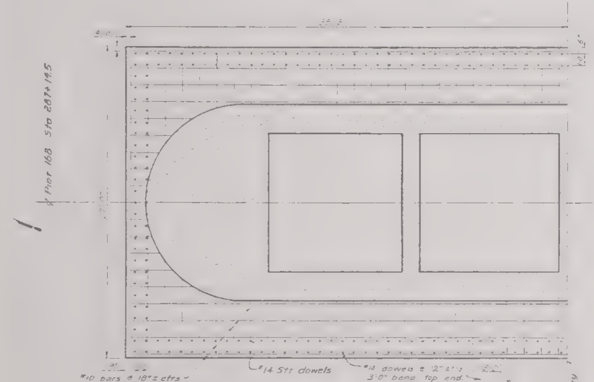
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS — PIER 168

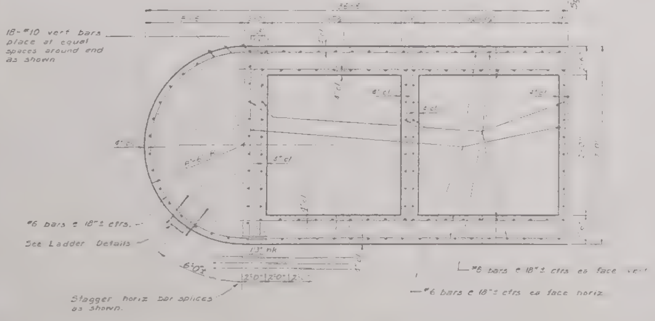
DATE 1-9-1961 SHEET 33 OF 56
BRIDGE NO 7949 DRAWING NO 17633

APR 2 1962
5 1962

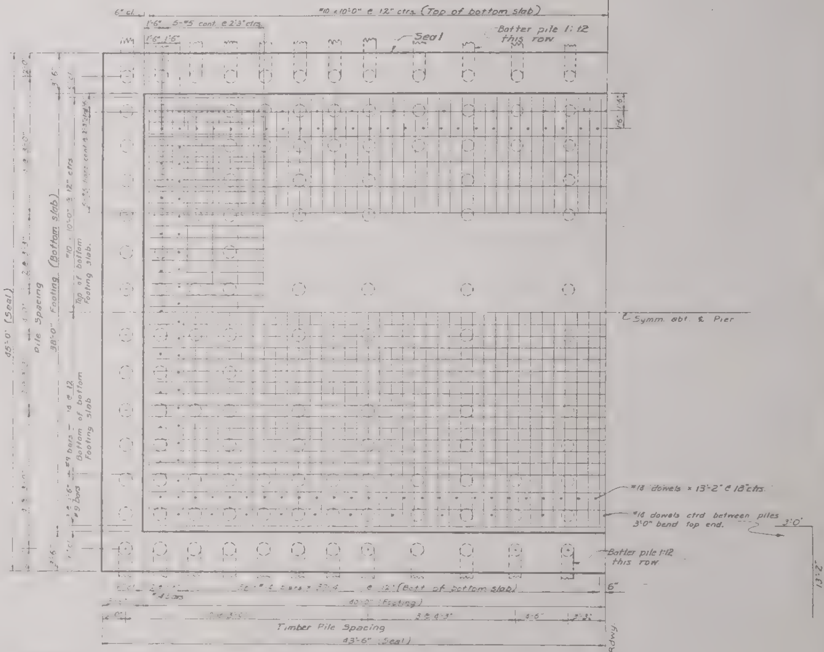

℄ Pier 168 Sta 287+14.5
1'-0"
6"
#10 bars @ 18"± ctrs each way (Top of slab)
#14 Str dowels
#18 dowels @ 12" ctrs 3'-0" bend top end.

TOP FOOTING SLAB - PLAN
Scale: 3/8" = 1'-0"

Symm abt ℄ Rdwy

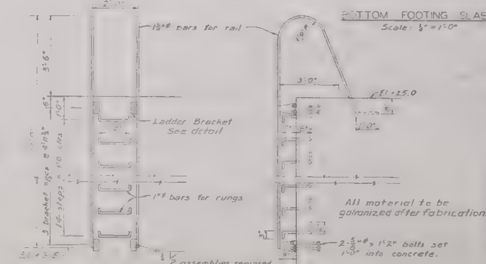

18-#10 vert bars place at equal spaces around end as shown
#6 bars @ 18"± ctrs.
See Ladder Details
3" cl
6'-0"±
2'-0" 2'-0" 2'
Stagger horiz bar splices as shown.
#6 bars @ 18"± ctrs ea face vert
#6 bars @ 18"± ctrs ea face horiz

SECTION X-X
Scale: 1/4" = 1'-0"


6" cl.
#10 x 10'-0" @ 12" ctrs (Top of bottom slab)
1'-6" 5-#5 cont. @ 2'-3" ctrs.
1'-6" 1'-6"
Seal
Batter pile 1:12 this row
45'-0" (Seal)
Pile Spacing
38'-0" Footing (Bottom slab)
#10 x 10'-0" @ 12" ctrs Top of bottom Footing slab.
5-#5 bars cont @ 2'-3" ctrs
3'-6"
1'-6"
#9 bars - 14 @ 12 Bottom of bottom Footing slab
#9 bars
℄ Symm. abt. ℄ Pier
#18 dowels x 13'-2" @ 18" ctrs.
#18 dowels ctrd between piles 3'-0" bend top end.
3'-0"
13'-2"
Batter pile 1:12 this row
6"
#6 bars x 37'-4" @ 12" (Bott of bottom slab)
40'-0" (Footing)
3 @ 4'-3"
4'-6"
Timber Pile Spacing
43'-6" (Seal)

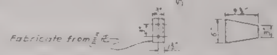
BOTTOM FOOTING SLAB - PLAN
Scale: 1/8" = 1'-0"

Symm. abt. ℄ Rdwy.


1 1/2" ϕ bars for rail
3'-6"
1'-0"
Ladder Bracket See detail
3 bracket spaces @ 4'-11 3/4"
14 steps @ 1'-0 ctrs
1" ϕ bars for rungs
3'-0"
El. 25.0
1'-0"
2-5/8" ϕ x 1'-2" bolts set 1'-0" into concrete.

2 assemblies required
All material to be galvanized after fabrication.

LADDER DETAILS
Scale: 1/2" = 1'-0"



LADDER BRACKET
Scale: 1" = 1'-0"
16 required

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRW'G.
FOR EXAMPLE:
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0".
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED J. A. CHECKED
DRAWN M. K. CALC. BOOK

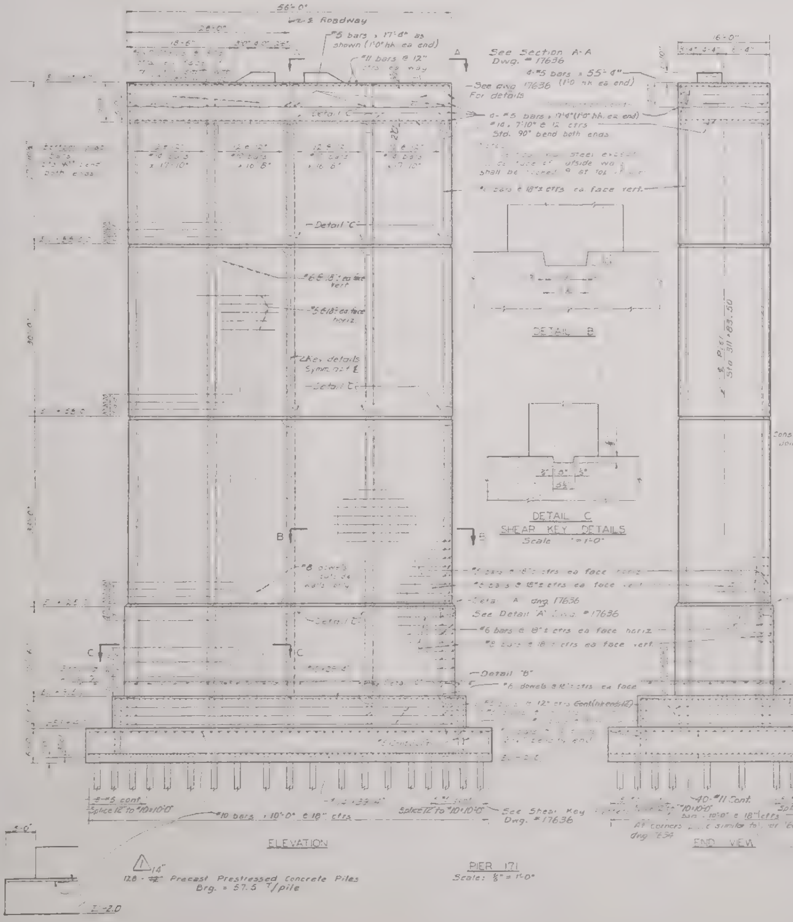
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FOOTING DETAILS - PIER 168

DATE 2-1-62 SHEET 34 OF 58
BRIDGE NO. 7949 DRAWING NO. 17634

APR 2 1962


56'-0"
℄ Roadway
28'-0"
18'-6"
#5 bars, 17'-6" as shown (1'-0" hh. ea end)
#11 bars @ 12" ctrs ea way
See Section A-A Dwg. #17636
4-#5 bars × 55'-6" (1'-0" hh ea end)
See dwg 17636 For details
4-#5 bars, 17'-4" (1'-0" hh. ea end)
#14, 7'-10" @ 12" ctrs
Std. 90° bend both ends
#6 bars @ 18"± ctrs ea face vert.
Detail C
#6 @ 18" ea face vert
#5 @ 18" ea face horiz
Key details Symm. abt ℄
Detail C
16'-0"
℄ Pier Sta 311+83.50
30'-0"
B
B
#8 dowels
#6 bars @ 18"± ctrs ea face horiz
#6 bars @ 18"± ctrs ea face vert
Detail "A" dwg 17636
See Detail 'A' Dwg #17636
#6 bars @ 18"± ctrs ea face horiz
#8 bars @ 18"± ctrs ea face vert
Detail "B"
#6 dowels @ 18"± ctrs ea face
Construction Joint
C
C
El. -2.0
5-#5 cont
Splice 12" to 10'-0"
#10 bars, 10'-0" @ 18" ctrs
Splice 12" to 10'-0"
See Shear Key Dwg. #17636
40-#11 Cont.
Splice 12" to 10'-0"
At corners ... similar to ... dwg 17634
Detail "A" dwg 17636
El. -2.0

DETAIL B

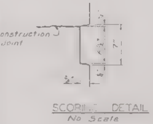
DETAIL C
SHEAR KEY DETAILS
Scale 1"=1'-0"

ELEVATION

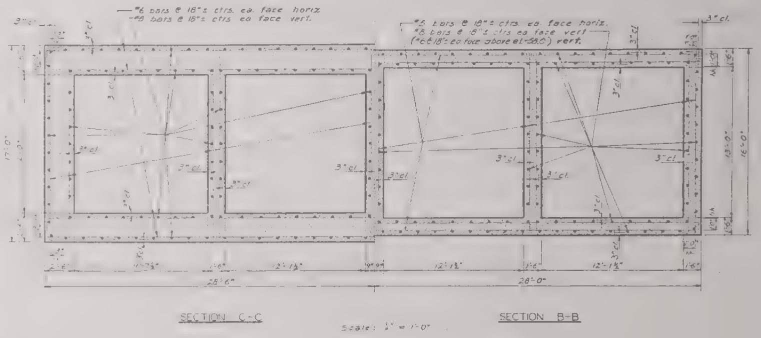
END VIEW

PIER 171
Scale: 1/8" = 1'-0"

Δ1 14"
128 - ~~12"~~ Precast Prestressed Concrete Piles
Brg. = 57.5 T/pile



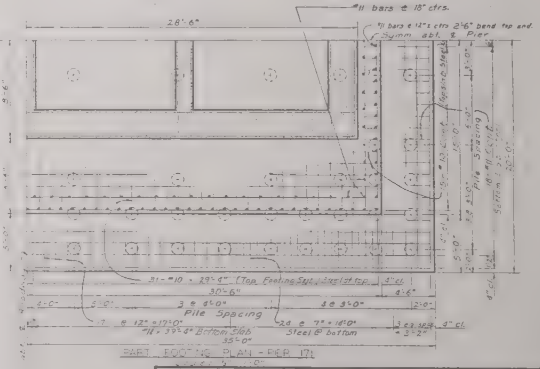
SCORING DETAIL
No Scale


#6 bars @ 18"± ctrs. ea. face horiz
#8 bars @ 18"± ctrs ea face vert.
#5 bars @ 18"± ctrs. ea. face horiz.
#8 bars @ 18"± ctrs ea face vert
(#6 @ 18"± ea face above el. +58.0) vert.
3" cl.
17'-0"
13'-0"
16'-0"
28'-6"
12'-1½"
1'-6"
28'-0"

SECTION C-C

SECTION B-B

Scale: ¼" = 1'-0"



PART FOOTING PLAN - PIER 171

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION
3-8-63	Piling size 12" to 14"

APPROVED.
Ivan D. Merchant
BRIDGE ENGINEER

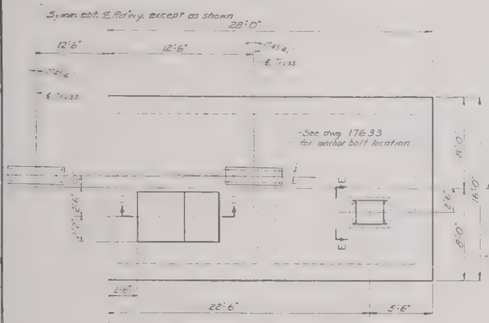
DESIGNED J. A.
CHECKED
DRAWN M. K.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

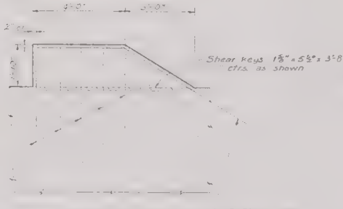
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON
PT. ELLICE, WASH.
PIER CONTRACT

DETAILS - PIER 171

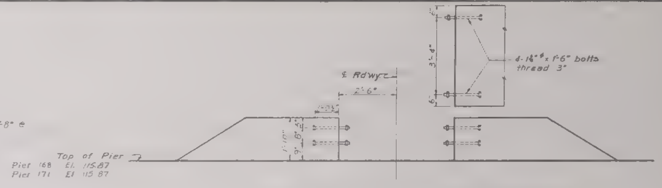
DATE 1-9-1962
SHEET 35 OF 58
BRIDGE NO 7949
DRAWING NO. 17635



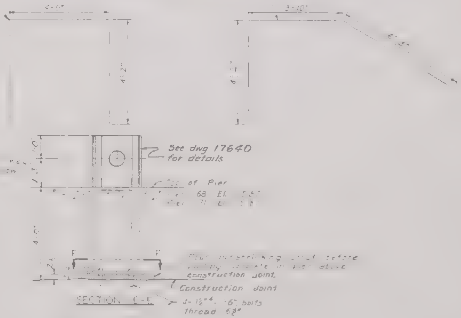
PIER 171 SECTION A-A
Scale ¼" = 1'-0"



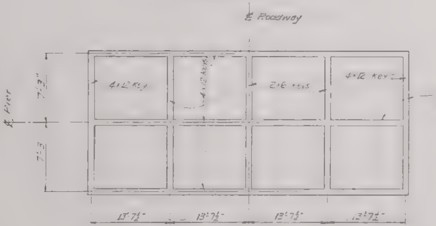
SECTION D-D - PIER 171
Pier 168 Same



BOLT DETAILS FOR WIND ANCHOR PIERS 168 & 171
Scale: ½" = 1'-0"

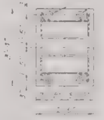


SECTION C-C

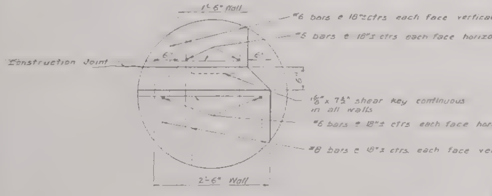


FOOTING - SHEAR KEY PATTERN - PIER 168 & 171
Scale ⅛" = 1'-0"

Key pattern located at: Pier 168 - Elevations -33.5 and -38.5
(if construction joints used) Pier 171 - " +4.0 and +9.5

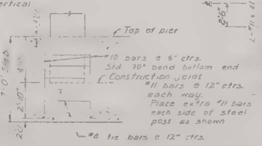


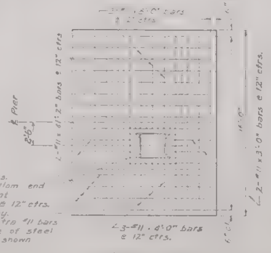
SECTION F-F
Scale ½" = 1'-0"


1'-6" Wall
#6 bars @ 18"± ctrs each face vertical
#5 bars @ 18"± ctrs each face horizontal
Construction Joint
6"
6"
6"
1⅝" x 7½" shear key continuous in all walls
#6 bars @ 18"± ctrs each face horizontal
#8 bars @ 18"± ctrs. each face vertical
2'-6" Wall

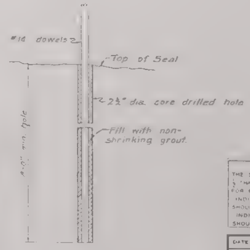
DETAIL A
See Dwgs. 17633 & 17635
Pier 168 & 171

SHEAR KEY DETAIL


Top of pier
#10 bars @ 6" ctrs. Std. 90° bend bottom end
℄ Construction joint
#11 bars @ 12" ctrs. each way.
Place extra #11 bars each side of steel post as shown
7'-0" Slab
2'-10"
2'-0"
#8 tie bars @ 12" ctrs.


5'-0" bars @ 12" ctrs
℄ Pier
2'-6"
2-#11 x 6'-2" bars @ 12" ctrs
2-#11 x 3'-0" bars @ 12" ctrs.
3-#11 . 4'-0" bars @ 12" ctrs.
6" cl.
6" cl.

DETAIL D - PIER 171
Pier 168 Similar but opposite hand



DOWEL DETAILS - PIER 168
Scale: 1½" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ½"=1'-0" SHOULD BE READ ¼"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

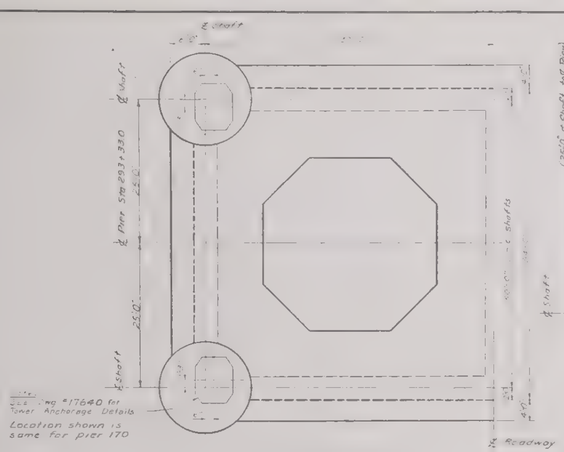
DETAILS - PIER 168 & 171

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER

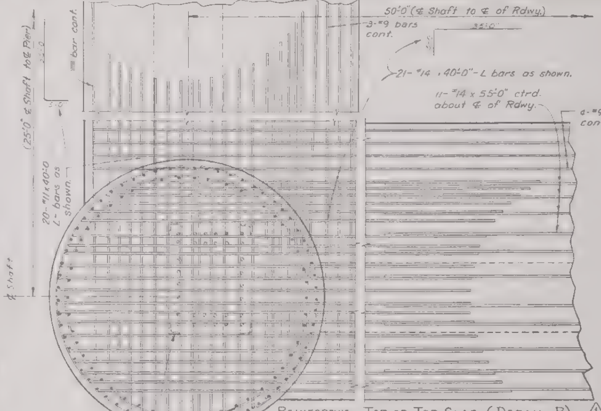
DESIGNED
DRAWN
CHECKED
CALC. BOOK

DATE 1-9-1962
SHEET 36 OF 58
BRIDGE NO 7949
DRAWING NO 17636

APR 2 1962

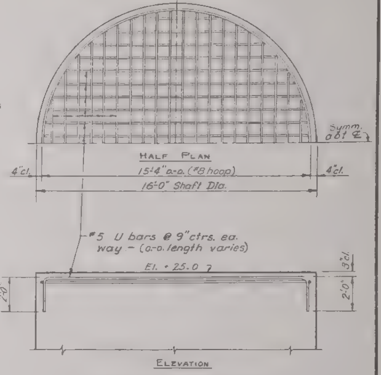

℄ Shaft
℄ Pier Sta 293+33.0
25'0"
25'0"
℄ Shaft
℄ Shaft
℄ Shafts
℄ Roadway
See Dwg #17640 for Tower Anchorage Details
Location shown is same for pier 170

HALF PLAN - PIER 169

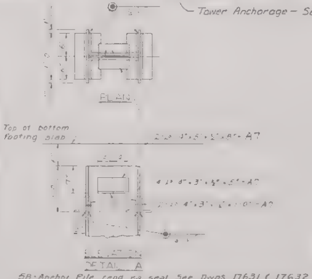

50'0" (℄ Shaft to ℄ of Rdwy.)
3-#9 bars cont.
35'0"
21-#14 x 40'0"-L bars as shown.
11-#14 x 55'0" ctrd. about ℄ of Rdwy.
6-#9 bars cont.
(25'0" ℄ Shaft to ℄ Pier)
#11 bar cont.
20-#11 x 40'0" L-bars as shown
℄ Shaft

REINFORCING - TOP OF TOP SLAB (DETAIL B) 1
Scale 3/8" = 1'-0"

Tower Anchorage - See Dwg. #17640.

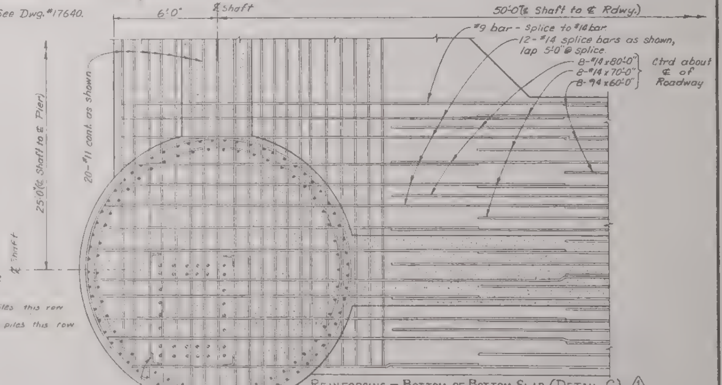


STEEL MAT AT TOP OF SHAFTS



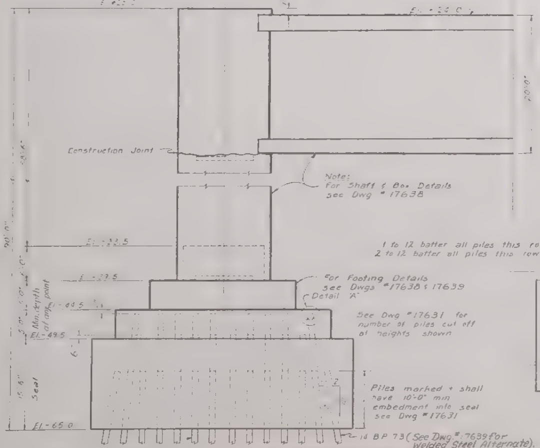
DETAIL A

58-Anchor Pile read as seal See Dwgs 17631 & 17632 for location
Scale: 1" = 1'-0"

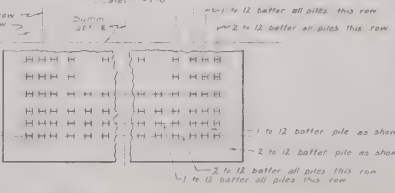

6'0"
℄ Shaft
50'0" (℄ Shaft to ℄ Rdwy.)
#9 bar - Splice to #14 bar.
12-#14 splice bars as shown, lap 5'0" @ splice.
8-#14 x 80'0"
8-#14 x 70'0"
8-#14 x 60'0"
Ctrd about ℄ of Roadway
20-#11 cont. as shown
25'0" (℄ Shaft to ℄ Pier)
℄ Shaft

REINFORCING - BOTTOM OF BOTTOM SLAB (DETAIL C) 1
Scale 3/8" = 1'-0"

Tower Anchorage See Dwg. #17640.


El. +25.0
El. +24.0
20'0"
Construction Joint
Note: For Shaft & Box Details see Dwg #17638
El. -32.5
El. -37.5
El. -44.5
El. -49.5
El. -65.0
Min. depth at any point
Seal
15.5'
For Footing Details see Dwgs #17638 & 17639
Detail "A"
See Dwg #17631 for number of piles cut off at heights shown
Piles marked + shall have 10'-0" min embedment into seal see Dwg #17631
14 BP 73 (See Dwg #17639 for Welded Steel Alternate).
264-14 BP 73

HALF ELEVATION - PIER 169
Scale: 1/4" = 1'-0"


1 to 12 batter all piles this row
2 to 12 batter all piles this row
Symm. abt ℄
1 to 12 batter all piles this row
2 to 12 batter all piles this row
1 to 12 batter pile as shown
2 to 12 batter pile as shown
2 to 12 batter all piles this row
1 to 12 batter all piles this row

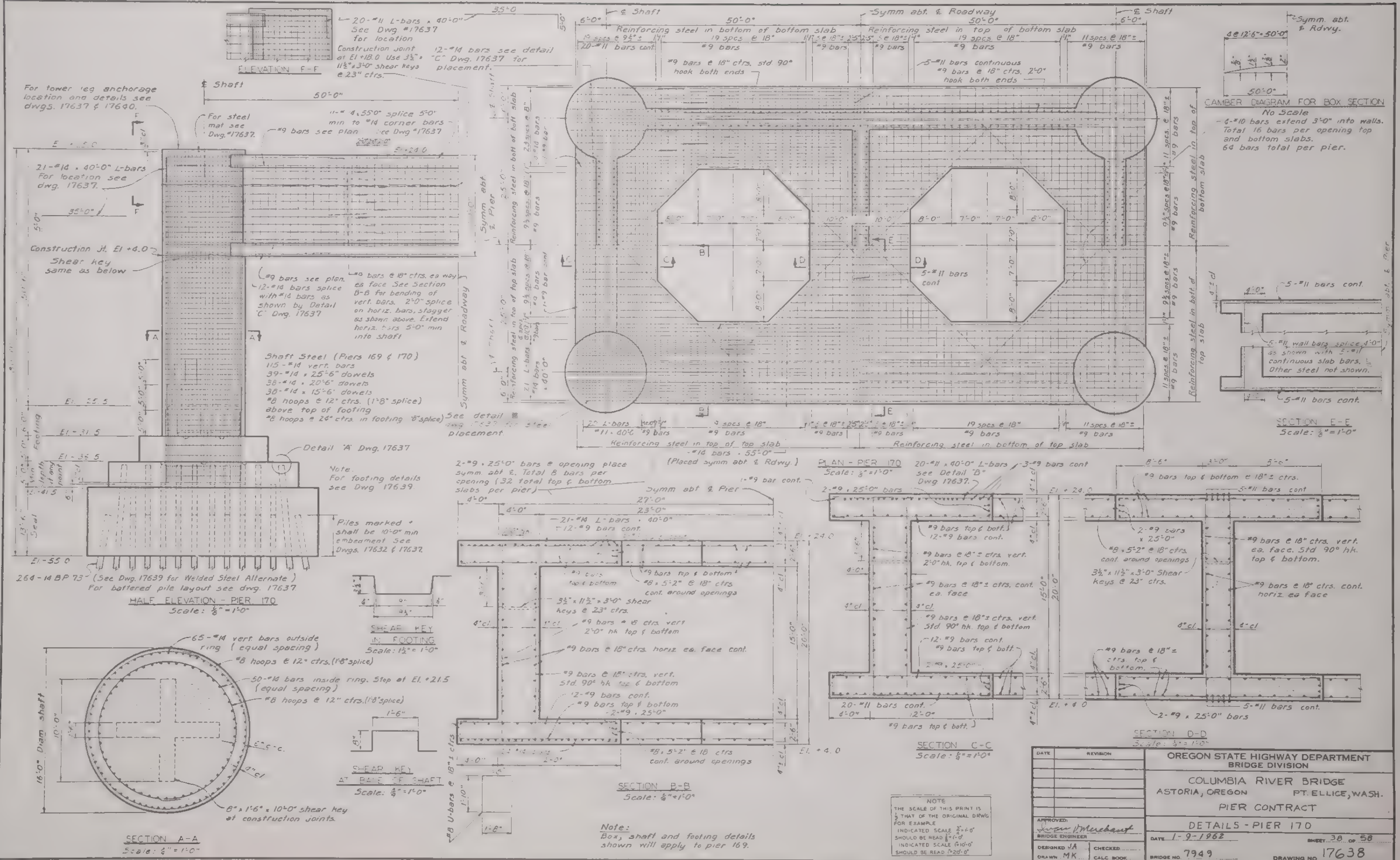
BATTERED PILE LAYOUT
FOR PIERS 169 & 170

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION
4-27-62	1 Tower Anchorage and reinforcing placement.

APPROVED: L. Merchant
BRIDGE ENGINEER
DESIGNED J.A. CHECKED
DRAWN M.K. CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
DETAILS - PIER 169
DATE 2-21-62 SHEET 37 OF 58
BRIDGE NO. 7949 DRAWING NO. 17637



ELEVATION F-F
20-#11 L-bars x 40'-0" See Dwg #17637 for location
Construction joint at El +18.0 Use 3½" x 11½" x 3'-0" shear keys @ 23" ctrs.
12-#14 bars see detail "C" Dwg. 17637 for placement.
35'-0
For tower leg anchorage location and details see dwgs. 17637 & 17640.
℄ Shaft
50'-0"
For steel mat see Dwg. #17637.
11-#14 x 55'-0" splice 5'-0" min to #14 corner bars
#9 bars see plan
21-#14 x 40'-0" L-bars For location see dwg. 17637.
El +24.0
35'-0"
Construction jt. El +4.0
Shear key same as below
#9 bars see plan. 12-#14 bars splice with #14 bars as shown by Detail "C" Dwg. 17637
#9 bars @ 18" ctrs. ea way ea face See Section B-B for bending of vert. bars. 2'-0" splice on horiz. bars, stagger as shown above. Extend horiz. bars 5'-0" min into shaft
Symm abt ℄ Roadway
Symm abt ℄ Pier
Shaft Steel (Piers 169 & 170)
115-#14 vert. bars
39-#14 x 25'-6" dowels
38-#14 x 20'-6" dowels
38-#14 x 15'-6" dowels
#8 hoops @ 12" ctrs. (1'-8" splice) above top of footing
#8 hoops @ 24" ctrs. in footing (8" splice)
See detail [illegible] Dwg 17637 for steel placement
El -31.5
El -35.5
El -41.5
El -55.0
Footing
Seal
Detail "A" Dwg. 17637
Note: For footing details see Dwg 17639
Piles marked • shall be 10'-0" min embedment. See Dwgs. 17632 & 17637.
264-14 BP 73 (See Dwg. 17639 for Welded Steel Alternate) For battered pile layout see dwg. 17637
HALF ELEVATION - PIER 170
Scale: ⅛" = 1'-0"
SHEAR KEY IN FOOTING
Scale: 1½" = 1'-0"
65-#14 vert. bars outside ring (equal spacing)
#8 hoops @ 12" ctrs. (1'-8" splice)
50-#14 bars inside ring. Stop at El. +21.5 (equal spacing)
#8 hoops @ 12" ctrs. (1'-8" splice)
10'-0"
16'-0" Diam shaft
6" x 1'-6" x 10'-0" shear key at construction joints.
SECTION A-A
Scale: ¼" = 1'-0"
SHEAR KEY AT BASE OF SHAFT
Scale: ⅜" = 1'-0"
#8 U-bars @ 18" ctrs
℄ Shaft
Reinforcing steel in bottom of bottom slab
Symm abt ℄ Roadway
50'-0"
Reinforcing steel in top of bottom slab
Symm. abt. ℄ Rdwy.
6'-0"
19 spcs @ 18"
20-#11 bars cont.
#9 bars
#9 bars @ 18" ctrs. std 90° hook both ends
5-#11 bars continuous
#9 bars @ 18" ctrs. 2'-0" hook both ends
11 spcs. @ 18" ±
Reinforcing steel in top of bottom slab
Reinforcing steel in bott of top slab
Reinforcing steel in top of top slab
Reinforcing steel in bott of bott slab
21 L-bars #14 bars x 40'-0"
5-#11 bars cont
#14 bars x 55'-0" (Placed symm abt ℄ Rdwy.)
Reinforcing steel in top of top slab
Reinforcing steel in bottom of top slab
PLAN - PIER 170
Scale: ⅛" = 1'-0"
CAMBER DIAGRAM FOR BOX SECTION
No Scale
4 @ 12'-6" = 50'-0"
50'-0"
6-#10 bars extend 3'-0" into walls. Total 16 bars per opening top and bottom slabs. 64 bars total per pier.
5-#11 bars cont.
5-#11 wall bars splice 4'-0" as shown with 5-#11 continuous slab bars. Other steel not shown.
5-#11 bars cont.
SECTION E-E
Scale: ⅜" = 1'-0"
2-#9 x 25'-0" bars @ opening place symm abt ℄. Total 8 bars per opening (32 total top & bottom slabs per pier)
Symm abt ℄ Pier
1-#9 bar cont.
27'-0"
23'-0"
21-#14 L-bars x 40'-0"
12-#9 bars cont.
#9 bars top & bottom
#8 x 5'-2" @ 18" ctrs cont. around openings
3½" x 11½" x 3'-0" shear keys @ 23" ctrs.
#9 bars @ 18" ctrs vert 2'-0" hk top & bottom
#9 bars @ 18" ctrs. horiz. ea. face cont.
#9 bars @ 18" ctrs. vert. Std. 90° hk top & bottom
12-#9 bars cont.
#9 bars top & bottom
2-#9 x 25'-0"
#8 x 5'-2" @ 18" ctrs cont. around openings
El +24.0
El +4.0
15'-0"
20'-0"
SECTION B-B
Scale: ¼" = 1'-0"
20-#11 x 40'-0" L-bars see Detail "B" Dwg 17637.
3-#9 bars cont
2-#9 x 25'-0" bars
#9 bars top & bott.
12-#9 bars cont.
#9 bars @ 18" ± ctrs vert. 2'-0" hk. top & bottom.
#9 bars @ 18" ± ctrs. cont. ea. face
#9 bars @ 18" ± ctrs. vert. Std. 90° hk. top & bottom
12-#9 bars cont.
#9 bars top & bott.
20-#11 bars cont.
#9 bars top & bott.
SECTION C-C
Scale: ¼" = 1'-0"
#9 bars top & bottom @ 18" ± ctrs.
5-#11 bars cont
2-#9 bars x 25'-0"
#8 x 5'-2" @ 18" ctrs. cont. around openings
3½" x 11½" x 3'-0" Shear keys @ 23" ctrs.
#9 bars @ 18" ctrs. vert. ea. face. Std 90° hk. top & bottom.
#9 bars @ 18" ctrs. cont. horiz. ea face
#9 bars @ 18" ± ctrs. top & bottom.
5-#11 bars cont.
2-#9 x 25'-0" bars
SECTION D-D
Scale: ¼" = 1'-0"

Note:
Box, shaft and footing details shown will apply to pier 169.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED JA
DRAWN MK
CHECKED
CALC BOOK

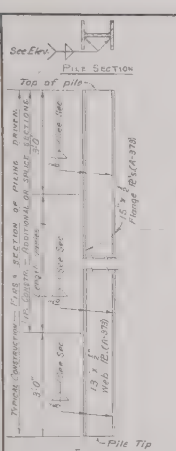
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

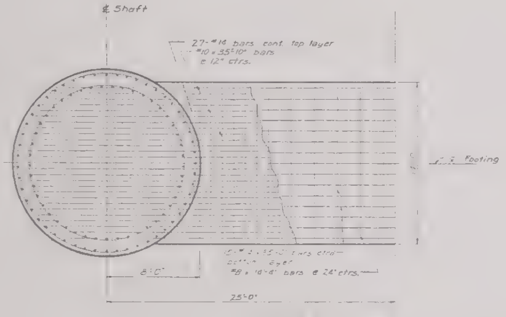
DETAILS - PIER 170

DATE 1-9-1962
SHEET 38 OF 58
BRIDGE NO. 7949
DRAWING NO. 17638

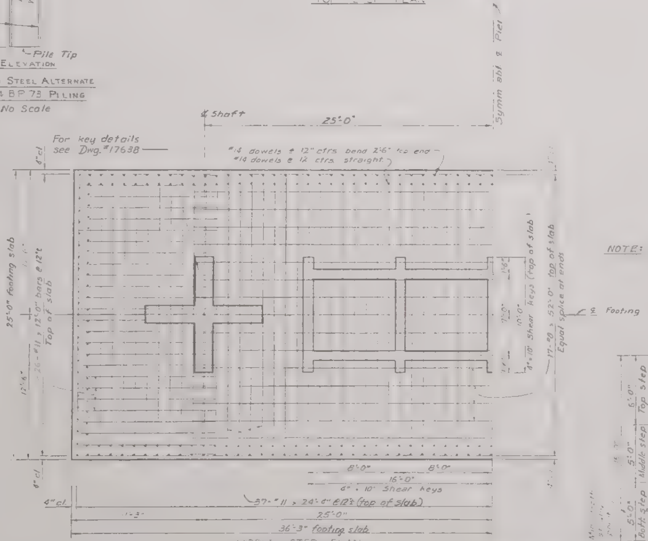
APR 2 1962


See Elev.
PILE SECTION
Top of pile
TYPICAL CONSTRUCTION – PILES & SECTION OF PILING DRIVEN
TIP CONSTR. – ADDITIONAL OR SPLICE SECTIONS
See Sec
15" x 1/2" Flange Pl's (A-373)
13 x 1/2" Web Pl. (A-373)
3'-0"
Pile Tip
ELEVATION

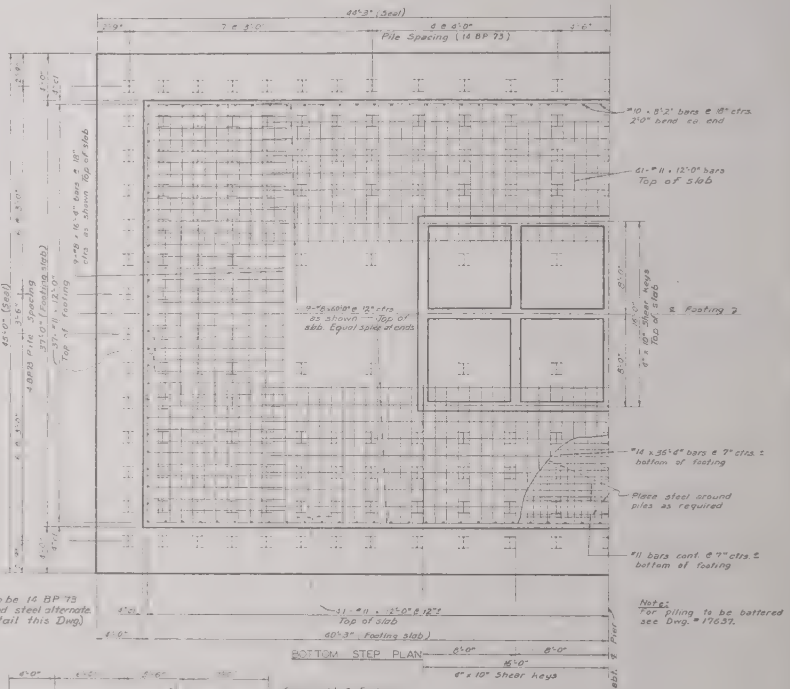
WELDED STEEL ALTERNATE FOR 14 BP 73 PILING
No Scale


℄ Shaft
27-#14 bars cont. top layer
#10 x 35'-10" bars @ 12" ctrs.
℄ Footing
15-#14 x 35'-0" bars ctrd. bottom layer
#8 x 14'-4" bars @ 24" ctrs.
8'-0"
25'-0"

TOP STEP PLAN


Symm abt ℄ Pier
℄ Shaft
25'-0"
For key details see Dwg. #17638
#14 dowels @ 12" ctrs bend 2'-6" to end
#14 dowels @ 12 ctrs. straight
4" cl.
25'-0" Footing slab
26-#11 x 12'-0" bars @ 12"± Top of slab
12'-6"
4" x 10" Shear keys (Top of slab)
17-#8 x 52'-0" top of slab Equal splice at ends
℄ Footing
8'-0"
16'-0"
8'-0"
4" x 10" Shear keys
4" cl.
37-#11 x 24'-4" @ 12"± (top of slab)
25'-0"
36'-3" footing slab

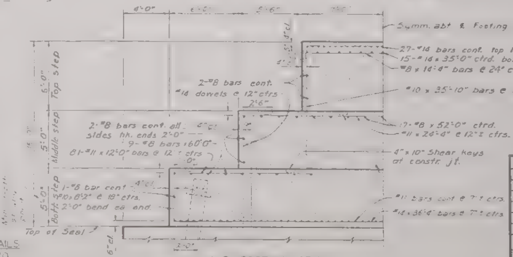
MIDDLE STEP PLAN


44'-3" (Seal)
2'-9"
7 @ 3'-0"
4 @ 4'-0"
3'-6"
Pile Spacing (14 BP 73)
#10 x 8'-2" bars @ 18" ctrs. 2'-0" bend ea. end
61-#11 x 12'-0" bars Top of slab
9-#8 x 16'-4" bars @ 18" ctrs as shown Top of slab
45'-0" (Seal)
14 BP 73 Pile Spacing
37'-0" (Footing slab)
37-#11 x 12'-0" Top of footing
9-#8 x 60'-0" @ 12" ctrs as shown – Top of slab. Equal splice at ends
4" x 10" Shear keys Top of slab
℄ Footing
8'-0"
16'-0"
#14 x 36'-4" bars @ 7" ctrs.± bottom of footing
Place steel around piles as required
#11 bars cont. @ 7" ctrs.± bottom of footing
61-#11 x 12'-0" @ 12"± Top of slab
60'-3" (Footing slab)
4'-0"
Symm. abt. ℄ Pier
8'-0"
8'-0"
16'-0"
4" x 10" Shear keys

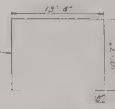
NOTE: Piling to be 14 BP 73 or welded steel alternate. (See detail this Dwg.)

BOTTOM STEP PLAN

Note: For piling to be battered see Dwg. #17637.


4'-0"
6'-0"
5'-6"
Symm. abt ℄ Footing
27-#14 bars cont. top layer
15-#14 x 35'-0" ctrd. bottom layer
#8 x 14'-4" bars @ 24" ctrs.
#10 x 35'-10" bars @ 12" ctrs.
2-#8 bars cont.
#14 dowels @ 12" ctrs
2'-6"
6'-0" Top step
5'-0" Middle step
5'-0" Bott. step
2-#8 bars cont. all sides hk. ends 2'-0"
9-#8 bars x 60'-0"
61-#11 x 12'-0" bars @ 12"± ctrs
17-#8 x 52'-0" ctrd.
#11 x 24'-4" @ 12"± ctrs.
4" x 10" Shear keys at constr. jt.
1-#8 bar cont.
#10 x 8'-2" @ 18" ctrs. 2'-0" bend ea. end
#11 bars cont @ 7"± ctrs.
#14 x 36'-4" bars @ 7"± ctrs.
Top of Seal
6" cl.
3'-0"

HALF FOOTING SECTION AT ℄ PIER



FOOTING DETAILS PIER 169 & 170
Scale: 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0"
SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

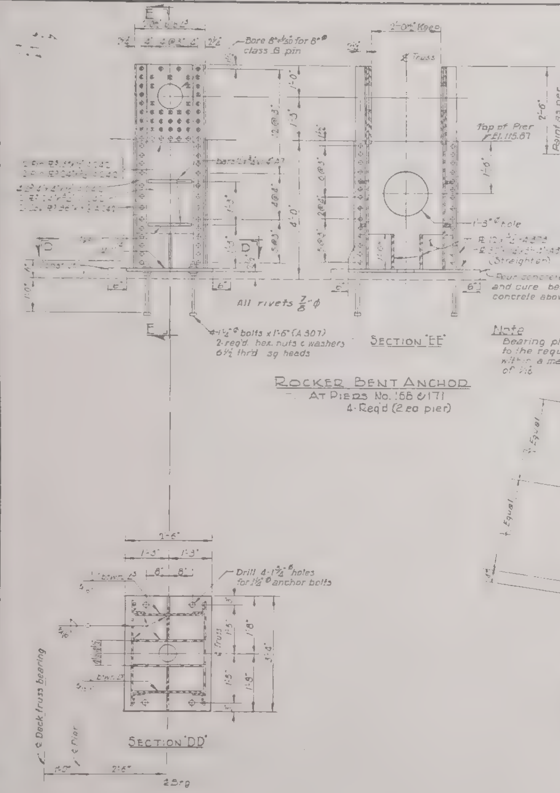
APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED J. A. CHECKED
DRAWN M. K. CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FOOTING DETAILS - PIER 169 & 170

DATE FEB 28, 1962 SHEET 39 OF 58
BRIDGE NO. 7949 DRAWING NO. 17639



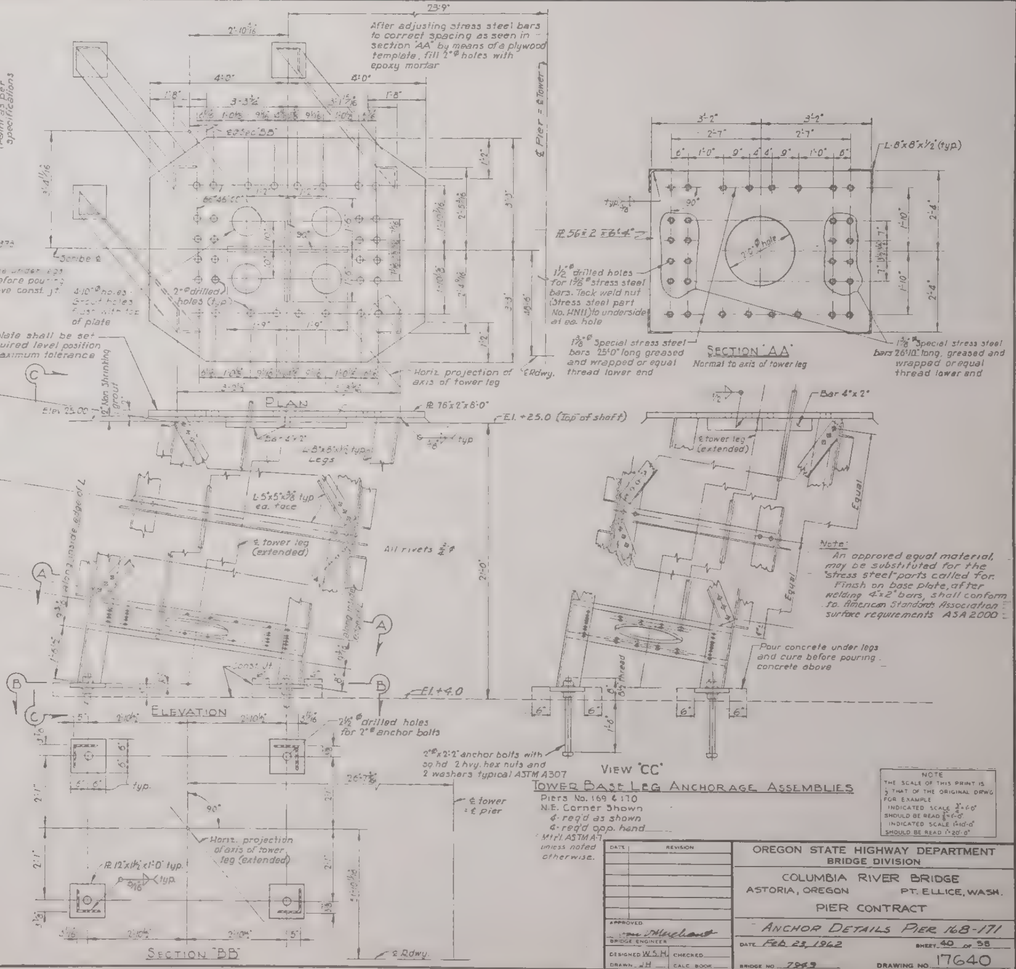
ROCKER BENT ANCHOR

AT PIERS No. 168 & 171
4-Req'd (2 ea pier)

SECTION "DD"

APR 2 1962

Note
Bearing plate shall be set to the required level position within a maximum tolerance of 1/16



After adjusting stress steel bars to correct spacing as seen in section "AA" by means of a plywood template, fill 2"⌀ holes with epoxy mortar

Note:
An approved equal material may be substituted for the "stress steel" parts called for.
Finish on base plate, after welding 4"x2" bars, shall conform to American Standards Association surface requirements ASA 2000

TOWER BASE LEG ANCHORAGE ASSEMBLIES

Piers No. 169 & 170
N.E. Corner Shown
4-req'd as shown
4-req'd opp. hand
Mtr'l. ASTM A-7 unless noted otherwise.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ 3/8"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

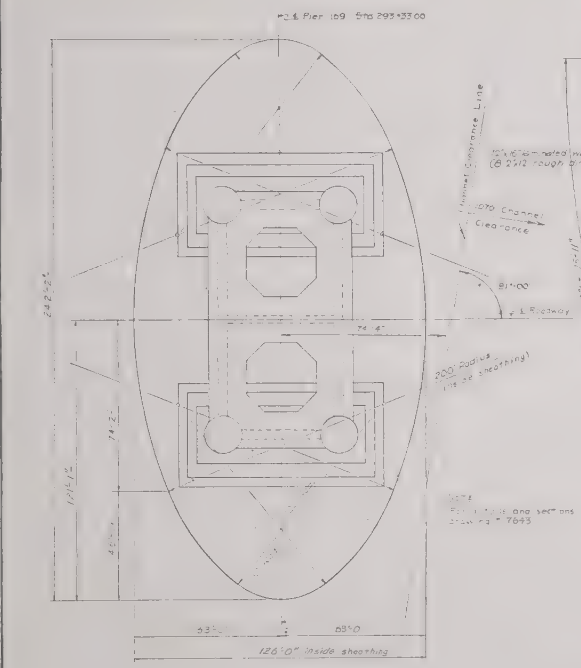
APPROVED
Merchant
BRIDGE ENGINEER
DESIGNED W.S.H. CHECKED
DRAWN J.H. CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

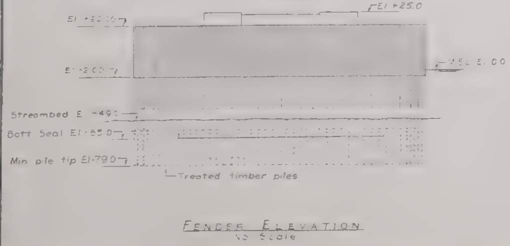
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ANCHOR DETAILS PIER 168-171

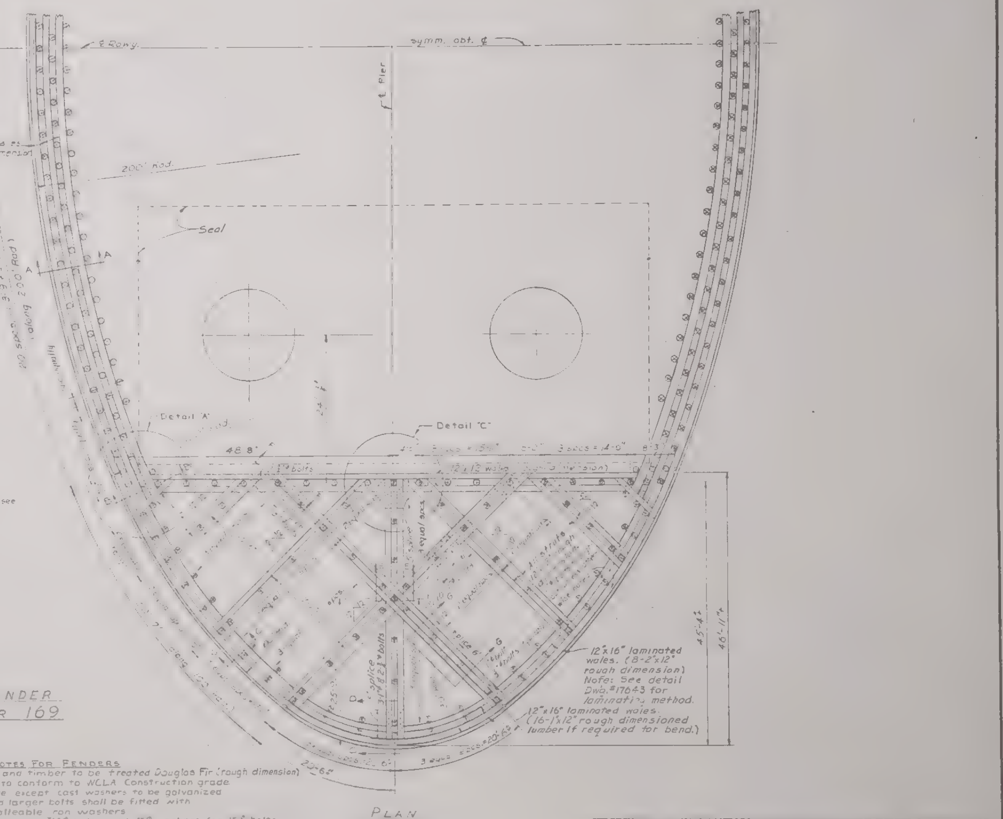
DATE Feb 23, 1962
SHEET 40 OF 58
BRIDGE NO. 7949
DRAWING NO. 17640



FENDER PLAN



FENDER ELEVATION
No Scale



℄ Rdwy.
symm. abt. ℄
℄ Pier
12"x16" laminated wales (8-2"x12" rough dimension)
200' Rad.
Seal
A
A
Detail "A"
Detail "C"
48'-8"
1¼" bolts
12"x12" wales
45'-4¼"
46'-11½"
12"x16" laminated wales. (8-2"x12" rough dimension) Note: See detail Dwg. #17643 for lamination method.
12"x16" laminated wales. (16-1"x12" rough dimensioned lumber if required for bend.)
D
G
20'-6"

FENDER
PIER 169

GENERAL NOTES FOR FENDERS

All lumber and timber to be treated Douglas Fir (rough dimension)
All lumber to conform to WCLA Construction grade
All hardware except cast washers to be galvanized
All ¾" ⌀ and larger bolts shall be fitted with cast or malleable iron washers
Use 3" ⌀ washers for ¾" ⌀ bolts, and 4" ⌀ washers for 1" ⌀ bolts
All 3"x12" diagonal sheathing to be fastened to wales at all crossings with 2-⅜" ⌀ x8" galvanized boat spikes. For vertical sheathing use 50 d spikes as required with a minimum of 10 spikes per board.
Piles to be treated Douglas Fir

PLAN
Scale: ⅛" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0"
SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0"
SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER

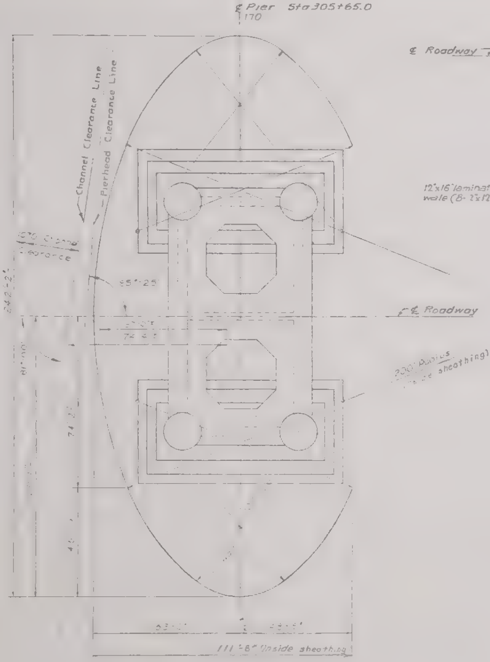
DESIGNED ..... CHECKED .....
DRAWN ..... CALC. BOOK .....

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

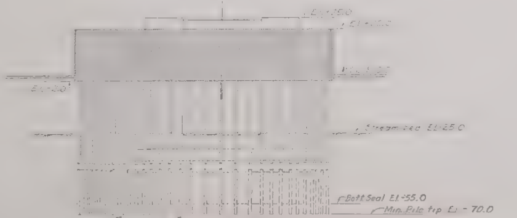
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FENDER PLAN - PIER 169

DATE FEB. 26, 1962 SHEET 41 OF 58
BRIDGE NO. 7949 DRAWING NO. 17641

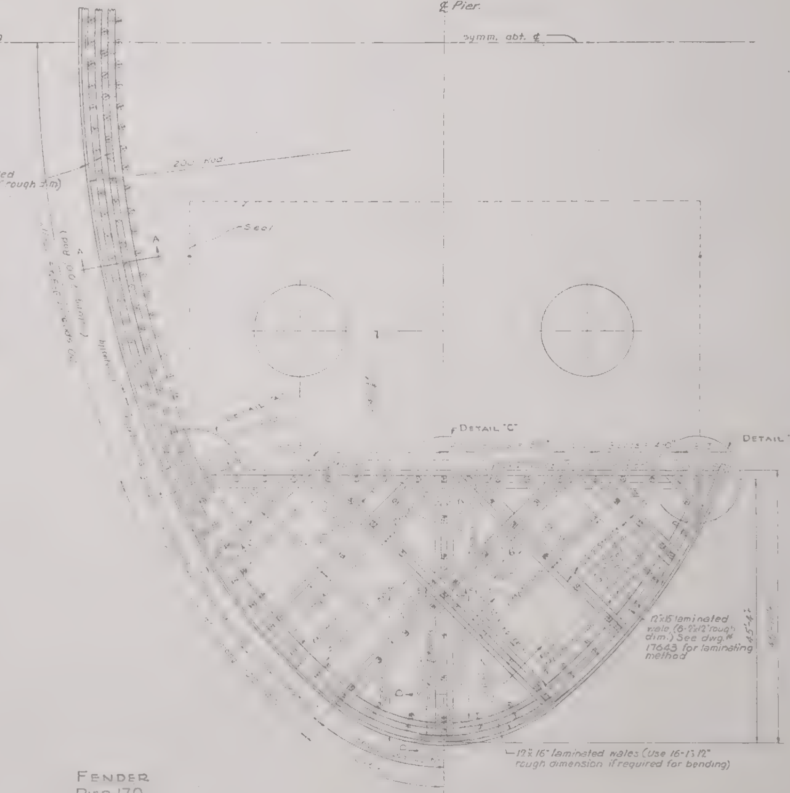


FENDER PLAN



FENDER ELEVATION

FENDER
PIER 170


℄ Roadway
℄ Pier
Symm. abt. ℄
12"x16" laminated wale (8-2"x12" rough dim)
200' Rad
Seal
A
Detail "A"
Detail "C"
Detail "B"
C
12"x16" laminated wale (8-2"x12" rough dim.) See dwg. # 17643 for laminating method
45'-4"
12"x16" laminated wales (Use 16-1"x12" rough dimension if required for bending)

PLAN
Scale: 1/8" = 1'-0"

Note:
See dwg. 17641 for general notes.
See dwg. 17643 for sections and details.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¼" = 1'-0" SHOULD BE READ ⅛" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED:
BRIDGE ENGINEER

DESIGNED
DRAWN G.E.
CHECKED
CALC. BOOK

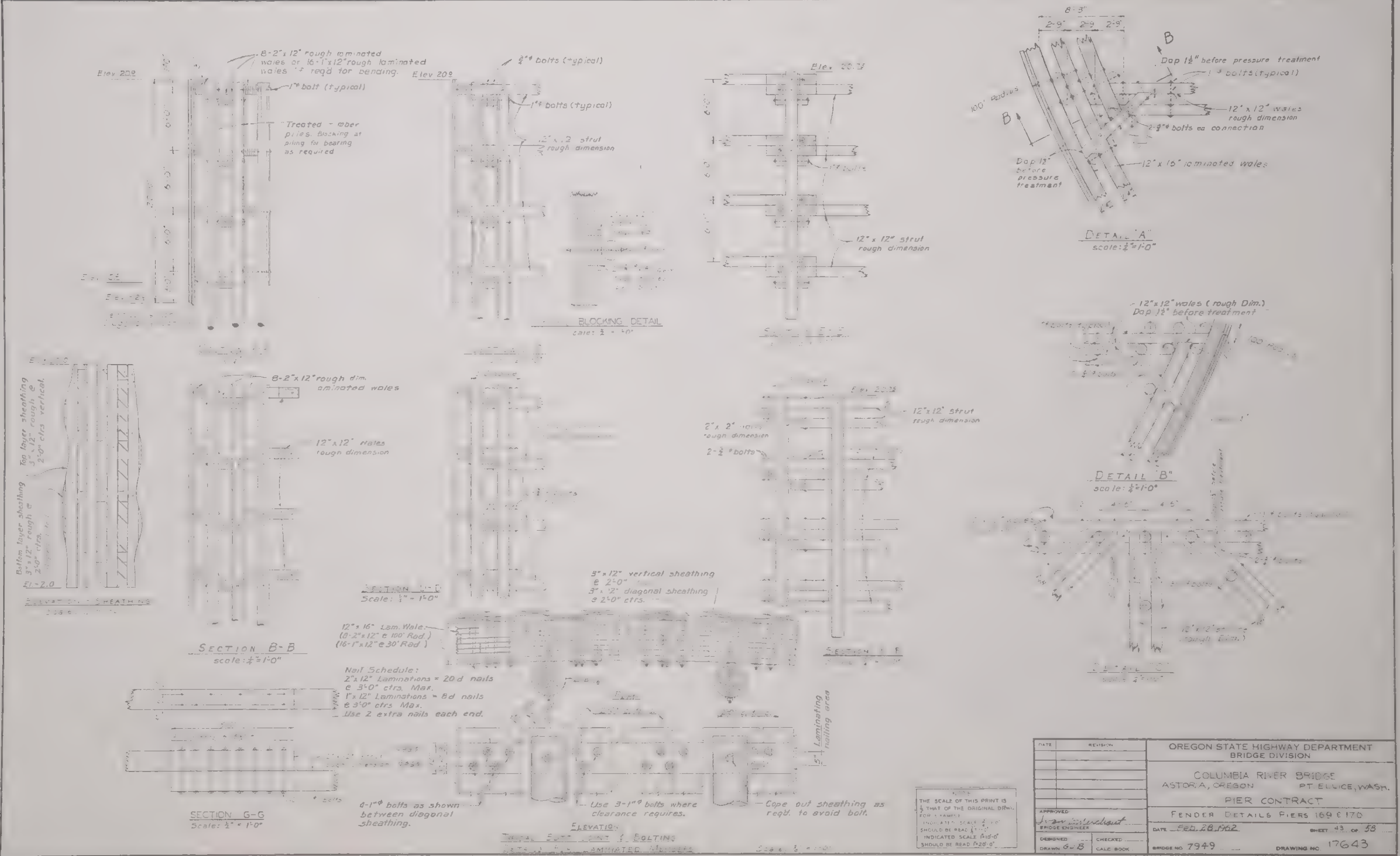
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FENDER PLAN - PIER 170

DATE FEB. 26, 1962 SHEET 42 OF 58
BRIDGE NO. 7949 DRAWING NO. 17642

APR 2 1962


Elev 20.0
8-2"x 12" rough laminated wales or 16-1"x12" rough laminated wales if reqd for bending.
1"φ bolt (typical)
Treated timber piles. Blocking at piling for bearing as required
Elev 20.0
¾"φ bolts (typical)
1"φ bolts (typical)
12"x12" strut rough dimension
BLOCKING DETAIL
Scale: ½" = 1'-0"
Elev 20.0
1"φ bolts
12" x 12" strut rough dimension
8'-3"
2'-9"
2'-9"
2'-9"
B
B
Dap 1½" before pressure treatment
1"φ bolts (typical)
100' Radius
12" x 12" wales rough dimension
2-¾"φ bolts ea connection
Dap 1½" before pressure treatment
12" x 16" laminated wales
DETAIL "A"
scale: ¼"=1'-0"
12"x12" wales (rough Dim.)
Dap 1½" before treatment
DETAIL "B"
scale: ¼"=1'-0"
El 20.0
Top layer sheathing 3"x12" rough @ 2'-0" ctrs vertical.
Bottom layer sheathing 3"x12" rough @ 2'-0" ctrs.
El -2.0
ELEVATION OF SHEATHING
8-2"x12" rough dim. laminated wales
12"x12" wales rough dimension
SECTION B-B
scale: ¼"=1'-0"
SECTION D-D
Scale: ¼" = 1'-0"
Elev 20.0
12"x12" strut rough dimension
2"x 2" rough dimension
2-¾"φ bolts
SECTION F-F
3"x12" vertical sheathing @ 2'-0"
3"x12" diagonal sheathing @ 2'-0" ctrs.
12"x16" Lam. Wale (8-2"x12" @ 100' Rad.) (16-1"x12" @ 30' Rad.)
Nail Schedule:
2"x12" Laminations = 20d nails @ 3'-0" ctrs. Max.
1"x12" Laminations = 8d nails @ 3'-0" ctrs. Max.
Use 2 extra nails each end.
Laminating nailing area
5"
SECTION G-G
Scale: ½" = 1'-0"
4-1"φ bolts as shown between diagonal sheathing.
Use 3-1"φ bolts where clearance requires.
Cope out sheathing as reqd. to avoid bolt.
ELEVATION
TYPICAL BUTT JOINT & BOLTING
DETAILS FOR LAMINATED MEMBERS
Scale: ⅜" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED
Ivan Merchant
BRIDGE ENGINEER

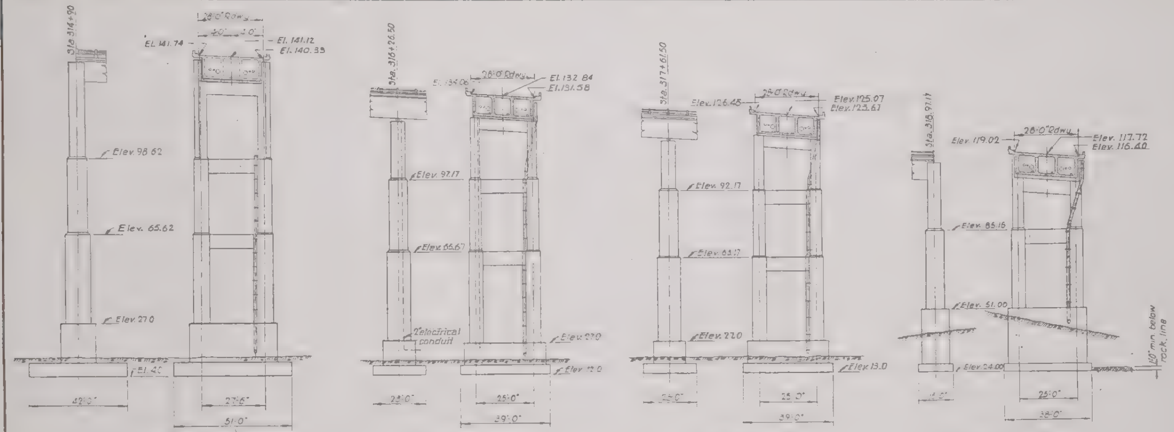
DESIGNED ____ CHECKED ____
DRAWN G-B CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

FENDER DETAILS PIERS 169 & 170

DATE Feb. 28, 1962 SHEET 43 OF 53
BRIDGE NO. 7949 DRAWING NO. 17643



Pier 172

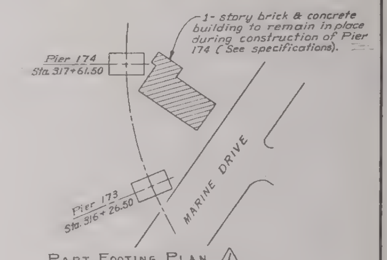
Pier 173

ELEVATIONS
Scale: 1" = 20'-0"

Pier 174

Note
Piling not shown in elevations

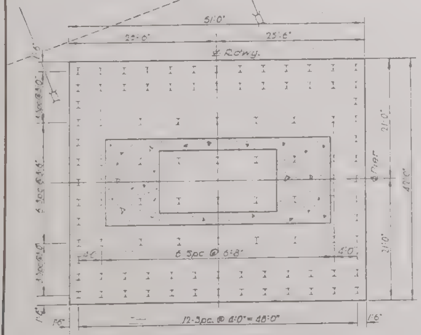
Pier 175


Pier 174
Sta. 317+61.50
1- story brick & concrete building to remain in place during construction of Pier 174 (See specifications).
Pier 173
Sta. 316+26.50
MARINE DRIVE

PART FOOTING PLAN ⚠
Scale 1" = 50'-0"

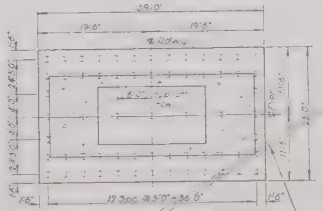
Pier	Load	F	Group
172	45.28 Ton/Pile	0.80	II A
173	54.04 " "	0.75	VII
174	52.15 " "	0.75	VII
175	4.30 Ton/Sq.ft.	0.80	II A

Note:
- Loads shown are F x actual group load.
Piling shall be driven for the basic design load as shown in above table.



98-10BP42 Steel piling

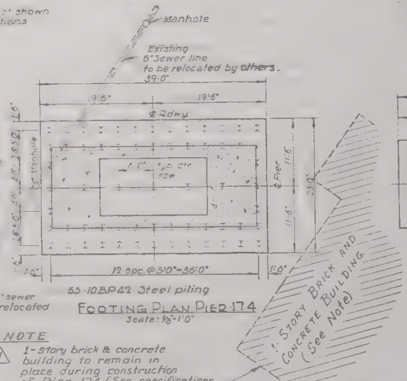
FOOTING PLAN PIER 172
Scale: 1/8" = 1'-0"



53-10BP42 Steel piling

FOOTING PLAN PIER 173
Scale: 1/8" = 1'-0"

Existing 10" sewer line to be relocated by others.

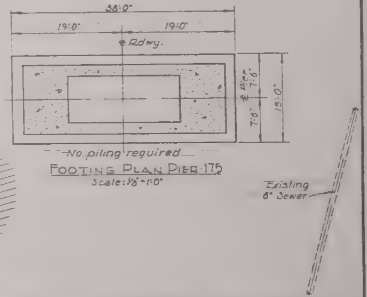


53-10BP42 Steel piling

FOOTING PLAN PIER 174
Scale: 1/8" = 1'-0"

NOTE

⚠ 1-story brick & concrete building to remain in place during construction of Pier 174 (See specifications, also "Part Footing Plan" above).



No piling required

FOOTING PLAN PIER 175
Scale: 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0" SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

Date	Revision
⚠ 3-30-62	Add Part Footing Plan

APPROVED: [illegible] Merchant
BRIDGE ENGINEER

DESIGNED J.E.B. CHECKED
DRAWN J.H. CALC. BOOK 663

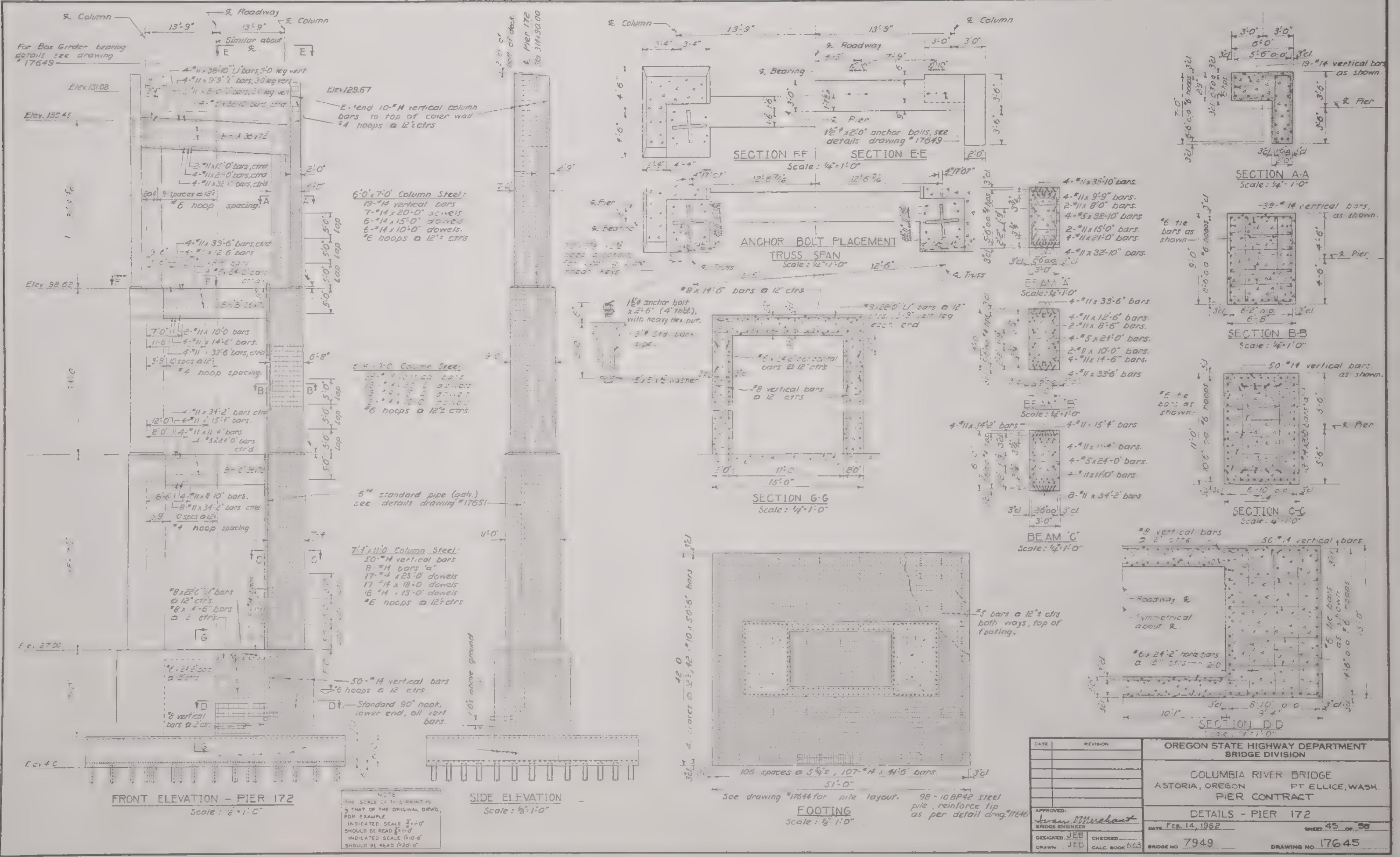
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ELEVATIONS & PILE LAYOUTS - PIERS 172 THRU 175

DATE 2-27-62
SHEET 44 OF
BRIDGE NO. 7949
DRAWING NO. 17644

REDUCED FOR MICRO APR 2 1962



NOTE
THE SCALE OF THIS PRINT IS
1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0"
SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan Merchant
BRIDGE ENGINEER
DESIGNED JEB
DRAWN JEB
CHECKED
CALC. BOOK 663

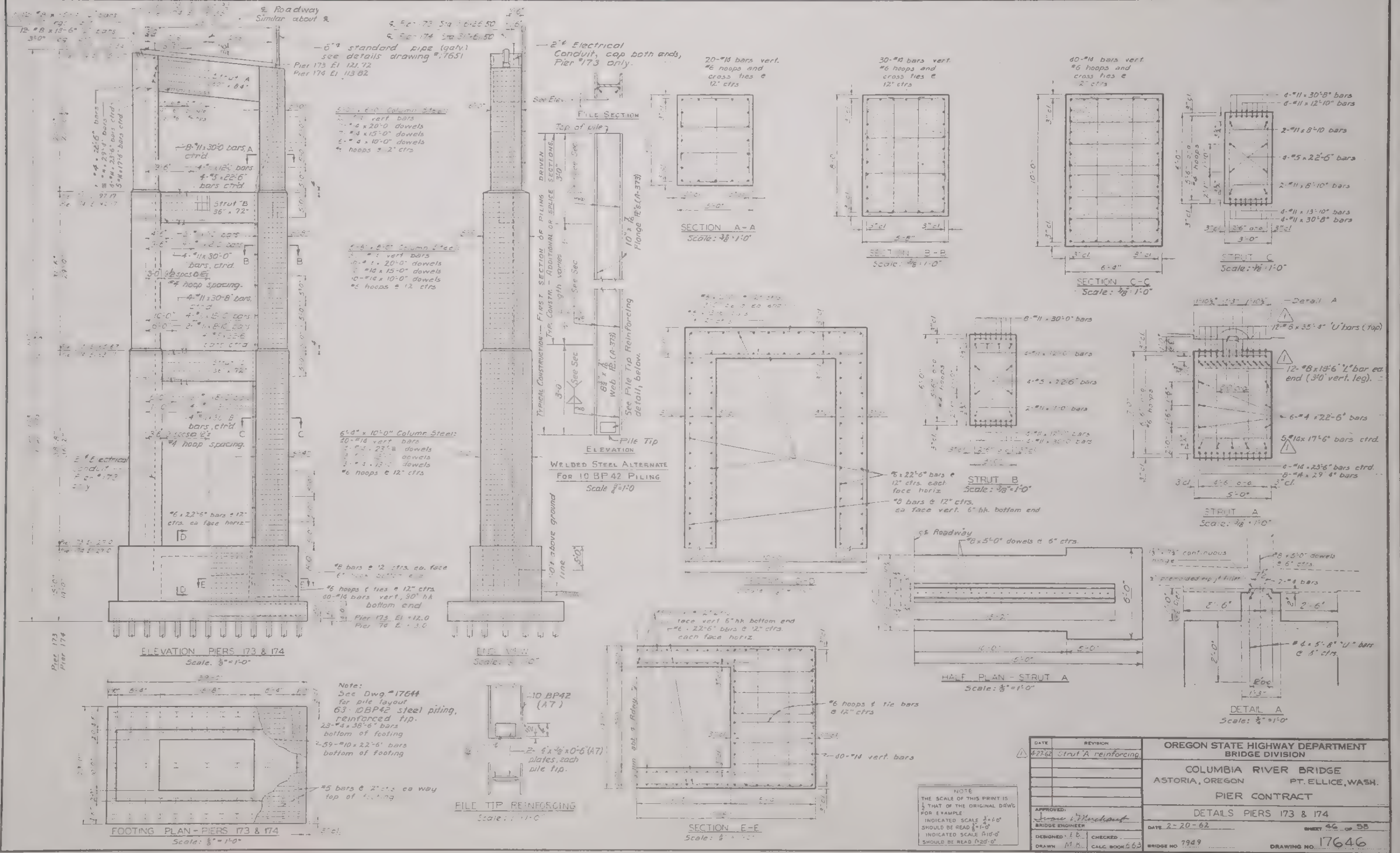
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON — PT ELLICE, WASH.
PIER CONTRACT

DETAILS - PIER 172

DATE FEB. 14, 1962
SHEET 45 OF 58
BRIDGE NO 7949
DRAWING NO 17645

APR 2 1962


℄ Roadway
Similar about ℄
12-#8 x 13-6" bars
3'-0" cg
-6" ⌀ standard pipe (galv.) see details drawing #17651
Pier 173 El 121.72
Pier 174 El 113.82
Strut A 84"
-8-#11 x 30'-0 bars, ctrd
4-#5 x 22'-6" bars ctrd
Strut "B 36" x 72"
4-#11 x 30'-0" bars, ctrd.
9½ spcs @ 1'' #4 hoop spacing.
4-#11 x 30'-8" bars, ctrd
bars, ctrd
#4 hoop spacing.
2" ⌀ Electrical conduit Pier #173 only
#6 x 22'-6" bars @ 12" ctrs. ea face horiz.
A
B
C
D
E
Pier 173
Pier 174
5'-0" x 6'-0" Column Steel:
vert. bars
x 20'-0 dowels
#4 x 15'-0" dowels
6-#4 x 10'-0" dowels
hoops @ 12" ctrs
5'-8" x 8'-0" Column Steel:
vert. bars
x 20'-0" dowels
#14 x 15'-0" dowels
10-#14 x 10'-0" dowels
#6 hoops @ 12 ctrs
6'-4" x 10'-0" Column Steel:
40-#14 vert. bars
x 23'- dowels
dowels
x 13'- dowels
#6 hoops @ 12" ctrs
#8 bars @ 12 ctrs. ea. face
#6 hoops & ties @ 12" ctrs
40-#14 bars vert., 90° hk bottom end
Pier 173 El +12.0
Pier 174 El +3.0
—2" ⌀ Electrical Conduit, cap both ends, Pier #173 only.
See Elev.
Pile Section
Top of pile
Typical Construction — First section of piling driven
Typ. Constr. – Additional or splice sections 3'-0"
See Sec
10" x 7/16" Flange ℞'s (A-373)
8¾" x 7/16" Web ℞ (A-373)
See Pile Tip Reinforcing detail, below.
Pile Tip
0' above ground line
20-#18 bars vert.
#6 hoops and cross ties @ 12" ctrs
30-#18 bars vert.
#6 hoops and cross ties @ 12" ctrs
40-#18 bars vert.
#6 hoops and cross ties @ 12" ctrs
5'-0"
5'-8"
8'-0"
6'-4"
10'-0"
3" cl
3" cl.
4-#11 x 30'-8" bars
4-#11 x 12'-10" bars
2-#11 x 8'-10 bars
4-#5 x 22'-6" bars
2-#11 x 6'-10" bars
4-#11 x 13'-10" bars
4-#11 x 30'-8" bars
2'-6" o-o
3'-0"
#4 hoops
8-#11 x 30'-0" bars
4-#5 x 22'-6" bars
6'-0"
#6 x 22'-6" bars @ 12" ctrs. each face horiz.
#8 bars @ 12" ctrs. ea face vert. 6" hk. bottom end
—Detail A
12-#8 x 35'-4" 'U' bars (top)
12-#8 x 13'-6" 'L' bar ea. end (3'-0" vert. leg).
6-#4 x 22'-6" bars
5-#14 x 17'-6" bars ctrd.
6-#14 x 23'-6" bars ctrd.
8-#14 x 29'-4" bars
4'-6" o-o
5'-0"
#6 hoops
℄ Roadway
#8 x 5'-0" dowels @ 6" ctrs.
6'-0"
5'-0"
continuous hinge
premolded exp. jt. filler
#8 x 5'-0" dowels @ 6" ctrs.
2-#4 bars
2'-6"
#4 x 5'-8" "U" bars @ 3" ctrs
1'-3"
face vert 6" hk bottom end
#6 x 22'-6" bars @ 12" ctrs. each face horiz.
#6 hoops & tie bars @ 12" ctrs
40-#14 vert. bars
39'-0"
6'-4"
6'-8"
23-#4 x 38'-6" bars bottom of footing
59-#10 x 22'-6" bars bottom of footing
#5 bars @ 12" ctrs ea way top of footing
10 BP42 (A7)
2-¾" x ⅜" x 0'-6" (A7) plates, each pile tip.

ELEVATION PIERS 173 & 174
Scale. ⅛" = 1'-0"

END VIEW
Scale: ⅛" = 1'-0"

WELDED STEEL ALTERNATE FOR 10 BP 42 PILING
Scale ⅞" = 1'-0

SECTION A-A
Scale: ⅜" = 1'-0"

SECTION B-B
Scale: ⅜" = 1'-0"

SECTION C-C
Scale: ⅜" = 1'-0"

STRUT C
Scale: ⅜" = 1'-0"

STRUT B
Scale: ⅜" = 1'-0"

STRUT A
Scale: ⅜" = 1'-0"

SECTION D-D

HALF PLAN - STRUT A
Scale: ⅜" = 1'-0"

DETAIL A
Scale: ¾" = 1'-0"

FOOTING PLAN - PIERS 173 & 174
Scale: ⅛" = 1'-0"

Note:
See Dwg. #17644 for pile layout
63 - 10BP42 steel piling, reinforced tip.

PILE TIP REINFORCING
Scale: 1" = 1'-0"

SECTION E-E

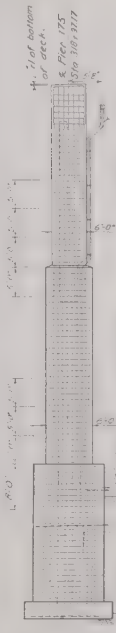
NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION
⚠1 4-27-62	Strut 'A' reinforcing

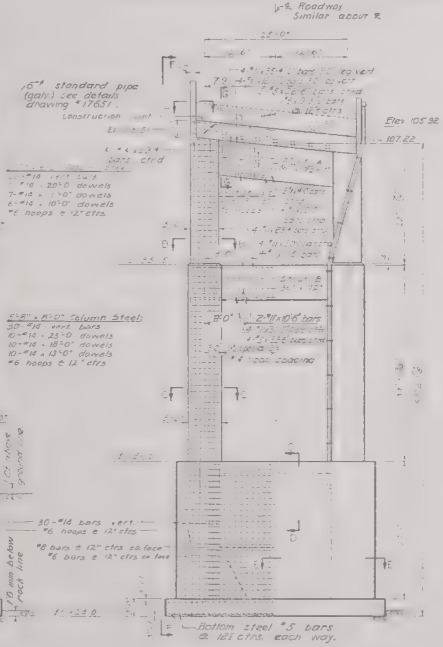
APPROVED: Ivan L. Merchant
BRIDGE ENGINEER
DESIGNED E.B. CHECKED
DRAWN M.H. CALC. BOOK 663

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT
DETAILS PIERS 173 & 174
DATE 2-20-62 SHEET 46 OF 58
BRIDGE NO 7949 DRAWING NO. 17646

APR 2 1962

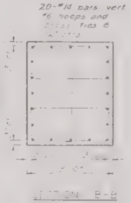


SECTION F-F
Scale: 1/8"=1'-0"

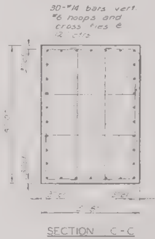


ELEVATION - PIER 175
Scale: 1/8"=1'-0"

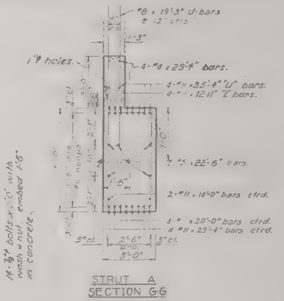
Note:
All vertical bars in bottom section shall have a std 90° hk bottom end.



SECTION B-B

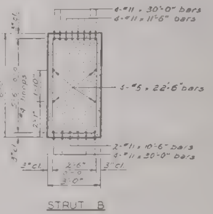


SECTION C-C



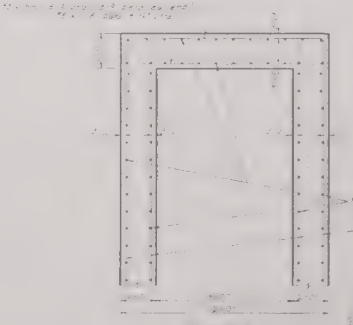
#8 × 19'-3" U-bars @ 12" ctrs
1'-3"
1"⌀ holes.
4-#4 × 23'-4" bars.
4-#11 × 35'-4" "U" bars.
4-#11 × 12'-11" "L" bars.
#5 × 22'-6" bars.
2-#11 × 14'-0" bars ctrd.
#11 × 20'-0" bars ctrd.
4-#11 × 29'-4" bars ctrd.
14-3/4"⌀ bolts × 1'-0" with wash & nut. embed 1'-6" in concrete.
3"cl.
2'-6"
3"cl.
3'-0"

STRUT A
SECTION GG



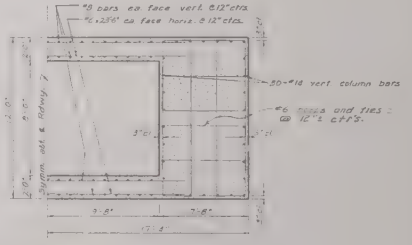
STRUT B

Scale: 3/8" = 1'-0"



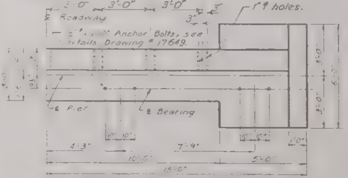
#6 × 23'-6" bars @ 12" ctrs each face. horiz
#8 bars @ 12" ctrs ea face vert.

SECTION D-D
Scale: 1/8" = 1'-0"

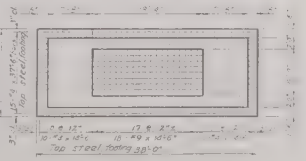


#8 bars ea. face vert. @ 12" ctrs
#6 × 23'-6" ea face horiz. @ 12" ctrs
30-#14 vert. column bars
#6 hoops and ties @ 12" ctrs.
Symm. abt. ℄ Rdwy.
3"cl
3"cl
2'-0"
9'-0"
2'-0"
9'-8"
7'-8"
17'-4"

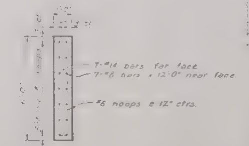
SECTION E-E
Scale: 1/8" = 1'-0"



ANCHOR BOLT PLACEMENT DETAILS
Scale: 1/2" = 1'-0"



FOOTING PLAN - PIER 175
Scale: 1/8" = 1'-0



SECTION A-A
Scale: 1/8" = 1'-0"

NOTE
THE SCALE OF THIS PRINT IS 1/2 THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE 3/4"=1'-0" SHOULD BE READ 3/8"=1'-0".
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER

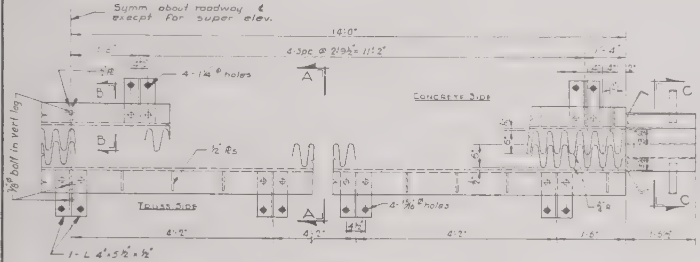
DESIGNED J.F.B. CHECKED
DRAWN M.K. CALC. BOOK 663

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

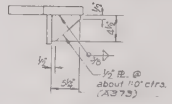
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

PIER 175

DATE 2-8-62
SHEET 47 OF 58
BRIDGE NO. 7949
DRAWING NO. 17647

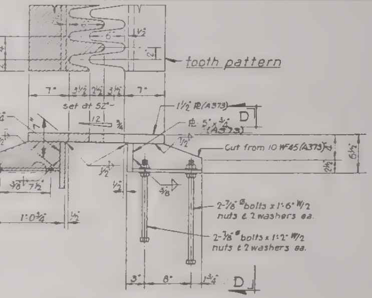


PLAN
EXPANSION DAM AT PIER-172

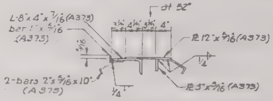


SECTION "BB"
Scale: 1½" = 1'-0"

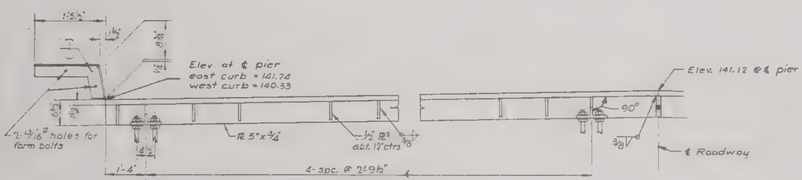
Note: Crosshatched portion of expansion dam to be fabricated and delivered to Job site by pier contractor & to be installed by others



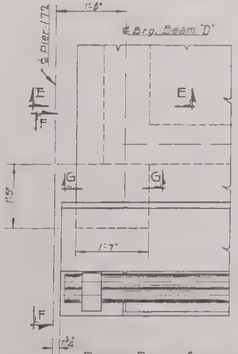
SECTION "AA"
Scale: 1½" = 1'-0"



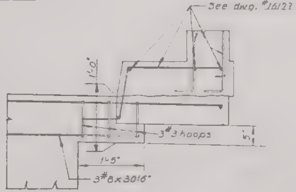
SECTION "CC"



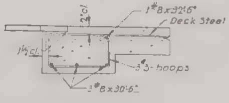
ELEVATION "DD"



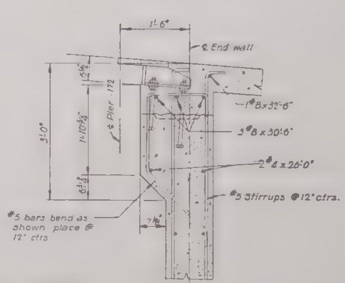
PLAN RIGHT CURB
PIER 172



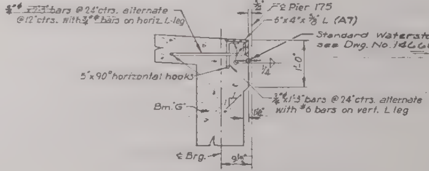
ELEVATION "FF"
EXPANSION DAM OMITTED



SECTION "GG"



Bm. "D"
SECTION "EE"



F ℄ Pier 175
6"×4"×⅜" L (A7)
#4 bars @ 24" ctrs. alternate @ 12" ctrs. with ¾" bars on horiz. L-leg
Standard Waterstop - see Dwg. No. 14660
5"×90° horizontal hooks
1'-0"
Bm. "G"
¾"×1'-3" bars @ 24" ctrs. alternate with #6 bars on vert. L leg
℄ Brg.
9¼"

ARMORED CORNER AT PIER 175

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ¼" = 1'-0"
SHOULD BE READ ⅛" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

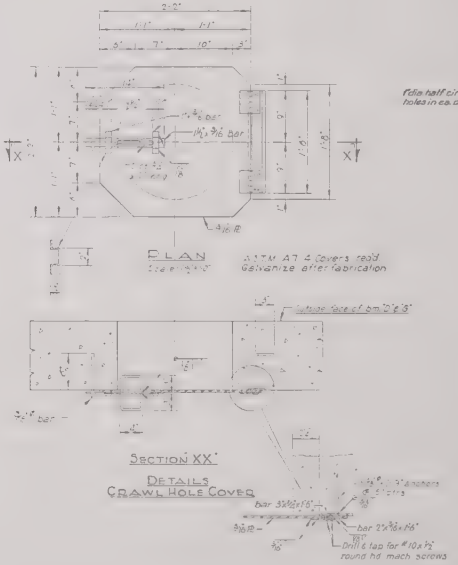
APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED —
CHECKED
DRAWN JH
CALC. BOOK —

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

EXPANSION JOINT DETAILS PIERS 172-175
DATE Feb 23, 1962
SHEET 48 OF 58
BRIDGE NO. 7949
DRAWING NO. 17648

APR 2 1962

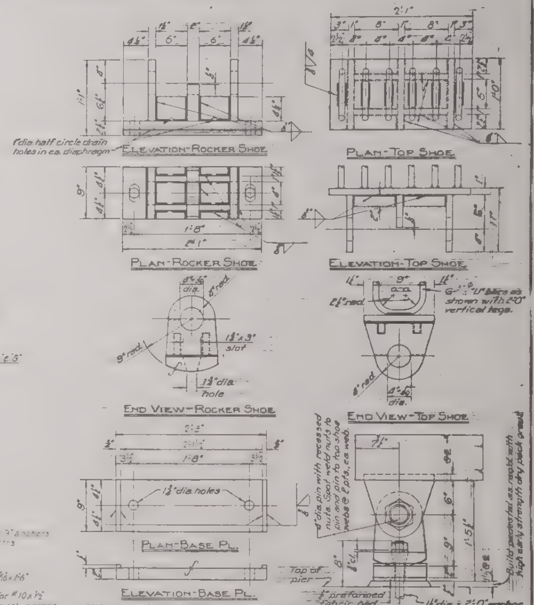


PLAN

ASTM A7 4 Covers req'd.
Galvanize after fabrication

SECTION XX

DETAILS
CRAWL HOLE COVER


1" dia. half circle drain holes in ea. diaphragm
ELEVATION-ROCKER SHOE
PLAN-TOP SHOE
PLAN-ROCKER SHOE
ELEVATION-TOP SHOE
2'-1"
1'-8"
6"
4½"
9"
1'-1"
6½"
2½"
6" rad.
9" rad.
1⅜"x 3" slot
1⅜" dia. hole
dia.
END VIEW-ROCKER SHOE
2¼" rad.
6 - "U" bars as shown with 2'-0" vertical legs.
END VIEW-TOP SHOE
1⅜" dia. holes
PLAN-BASE PL.
ELEVATION-BASE PL.
4" dia. pin with recessed nuts. Spot weld nuts to pin and pin to top shoe webs @ 2 pts., ea. web.
Build pedestal as reqd. with high early strength dry pack grout
Top of pier
⅛" preformed fabric pad.
℄ bearing
1¼" dia. x 2'-0" anchor bolts. Spot weld nuts to bolts.
1'-5½"
EXPANSION ASSY.

Note: All material shall be structural carbon steel, ASTM specification A7. Assemblies shall be stress relief annealed after fabrication. Surface finish of bearing surfaces in contact with each other shall be as follows:

Heavy plates in contact to be welded	ASA 1,000
Rockers	ASA 250
Pins & pin holes	ASA 125

EXPANSION ASSEMBLY DETAILS
Scale- 1½"=1'-0"
8 required thus

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾"=1'-0" SHOULD BE READ ⅜"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

APPROVED:
BRIDGE ENGINEER
DESIGNED: E.B. CHECKED:
DRAWN: J.H. CALC. BOOK 663

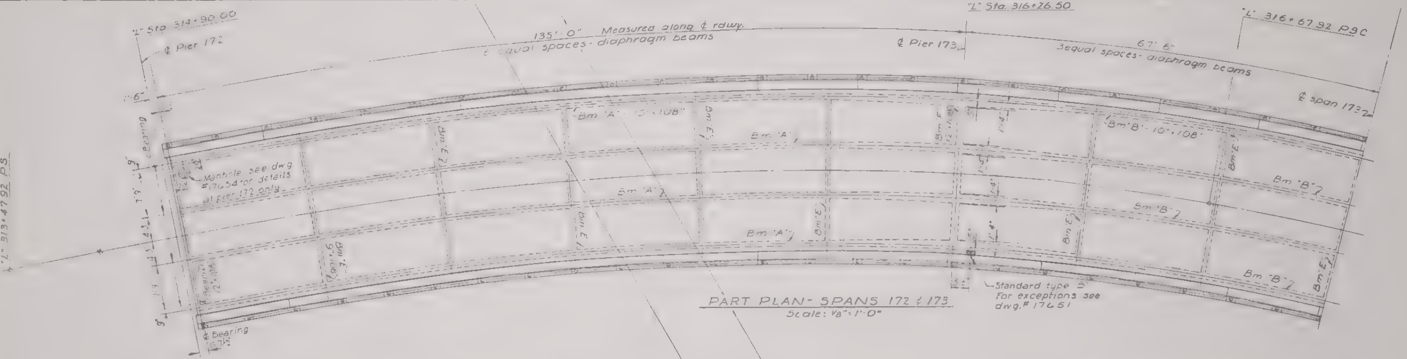
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

ROCKER & MISC. DETAILS SPANS 172-174

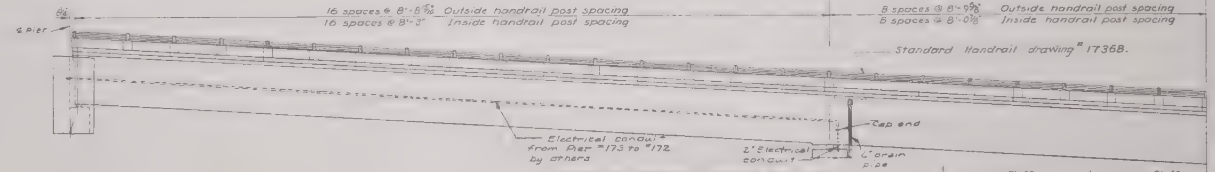
DATE FEB. 26, 1962
SHEET 49 OF 58
BRIDGE NO. 7949
DRAWING NO. 17649

APR 2 1962


"L" Sta. 314+90.00
℄ Pier 172
135'-0" Measured along ℄ rdwy.
6 equal spaces - diaphragm beams
"L" Sta. 316+26.50
℄ Pier 173
67'-6"
3 equal spaces - diaphragm beams
"L" 316+67.92 P.S.C
℄ Span 173
"L" 313+47.92 P.S.
Bm "A" 13"x108"
Bm "A"
Bm "B" 10"x108"
Bm "B"
Bm "E"
Bm "F"
Manhole see dwg. #17654 for details at Pier 172 only
Standard type "3" For exceptions see dwg. #17651
℄ Bearing

PART PLAN - SPANS 172 & 173

Scale: 1/8" = 1'-0"

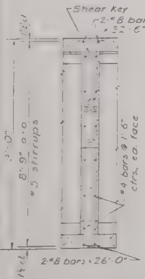

16 spaces @ 8'-8 5/16" Outside handrail post spacing
16 spaces @ 8'-3" Inside handrail post spacing
8 spaces @ 8'-9 5/8" Outside handrail post spacing
8 spaces @ 8'-0 7/8" Inside handrail post spacing
℄ Pier
Standard Handrail drawing # 17368.
Electrical conduit from Pier #173 to #172 by others
2" Electrical conduit
Cap end
6" drain pipe

PART ELEVATION - SPANS 172 & 173

Scale: 1/8" = 1'-0"

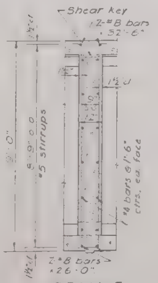
Note

Beam "D" & "G" are similar
beam "G" has an armored corner
See dwg. #17648 for details not shown



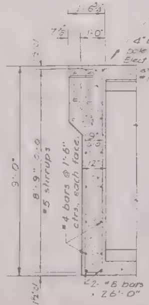
BEAM-E

Scale: 2" = 1'-0"



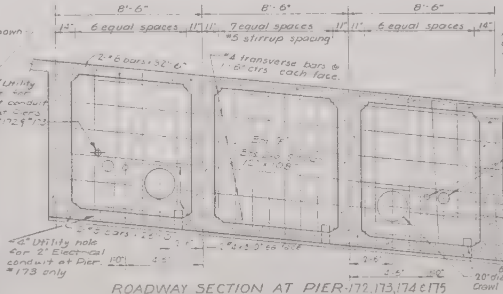
BEAM-F

Scale: 2" = 1'-0"


1'-6 3/4"
7 1/2"
1'-0"
4" Utility hole for Elect conduit at Piers #172 & 173
9'-0"
8'-9" o.o
#5 stirrups
#4 bars @ 1'-6" ctrs. each face
2-#8 bars x 26'-0"

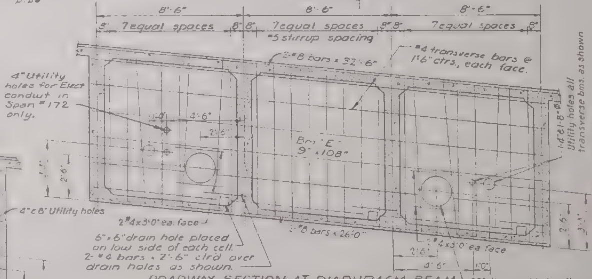
BEAM-D&G

Scale: 1/2" = 1'-0"


8'-6"
8'-6"
8'-6"
14" 6 equal spaces 11" 11" 7 equal spaces 11" 11" 6 equal spaces 14"
#5 stirrup spacing
2-#8 bars x 32'-6"
#4 transverse bars @ 1'-6" ctrs each face.
Bm "F" 12" x 108"
4" Utility hole for 2" Electrical conduit at Pier #173 only
2-#8 bars x 26'-0"
2-#4 x 3'-0" ea face
2'-6"
4'-6"
1'-0"
4" @ 8" Utility holes
20" dia. Crawl hole
6"x6" drain hole placed on low side of ea. cell. At bm. "F" only

ROADWAY SECTION AT PIER-172, 173, 174 & 175

Scale: 3/8" = 1'-0"


8'-6"
8'-6"
8'-6"
8" 7 equal spaces 8" 8" 7 equal spaces 8" 8" 7 equal spaces 8"
#5 stirrup spacing
2-#8 bars x 32'-6"
#4 transverse bars @ 1'-6" ctrs, each face.
4" Utility holes for Elect conduit in Span #172 only.
1'-0"
4'-6"
Bm "E" 9" x 108"
2#4x3'0" ea face
6"x6" drain hole placed on low side of each cell.
2-#4 bars x 2'-6" ctrd over drain holes as shown.
2-#8 bars x 26'-0"
2-#4x3'0" ea face
2'-6"
4'-6"
1'-0"
1'-4" x 1'-8" Ø Utility holes all transverse bms. as shown
20" dia. crawl hole all transverse bms. as shown

ROADWAY SECTION AT DIAPHRAGM BEAM

Scale: 3/8" = 1'-0"

NOTE

THE SCALE OF THIS PRINT IS
1/2 THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE 3/4" = 1'-0"
SHOULD BE READ 3/8" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED:
[illegible] Merchant
BRIDGE ENGINEER

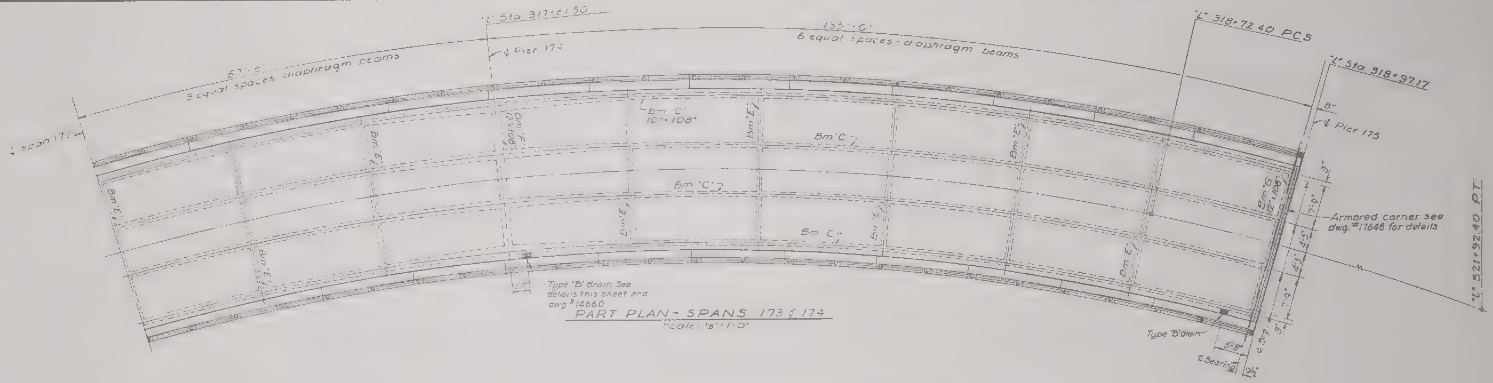
DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

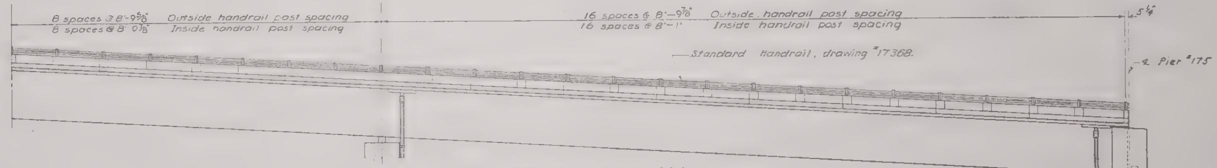
COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS SPANS 172 and 173

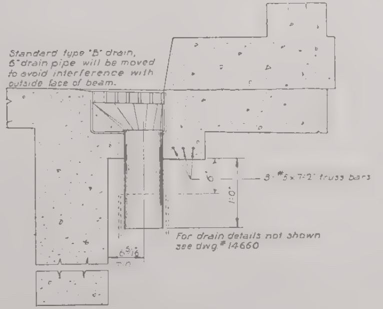
DATE FEB. 26, 1962
SHEET 50 OF 58
BRIDGE NO. 7949
DRAWING NO. 17650



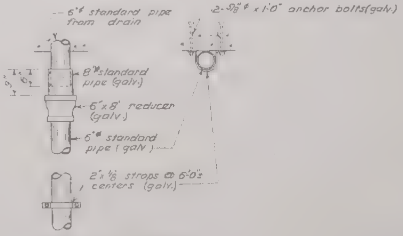
PART PLAN - SPANS 173 & 174
Scale: ⅛" = 1'-0"


8 spaces @ 8'-9⅝" Outside handrail post spacing
8 spaces @ 8'-0⅞" Inside handrail post spacing
16 spaces @ 8'-9⅞" Outside handrail post spacing
16 spaces @ 8'-1" Inside handrail post spacing
5¼"
Standard Handrail, drawing #17368.
℄ Pier #175

PART ELEVATION SPANS 173 & 174
Scale: ⅛" = 1'-0"


Standard type "B" drain, 6" drain pipe will be moved to avoid interference with outside face of beam.
3 - #5 × 7'-2" truss bars
6"
1'-0"
6 5/16
7'-0
For drain details not shown see dwg #14660

SECTION AT DRAINS
Scale: 1½" = 1'-0"


6"⌀ standard pipe from drain
2 - ⅝"⌀ × 1'-0" anchor bolts (galv.)
8"⌀ standard pipe (galv.)
6"
9"
6" × 8" reducer (galv.)
6"⌀ standard pipe (galv.)
2" × ⅛" straps @ 6'-0"± centers (galv.)

DRAIN PIPE DETAILS
Scale: ¾" = 1'-0"

APR 2 1962

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

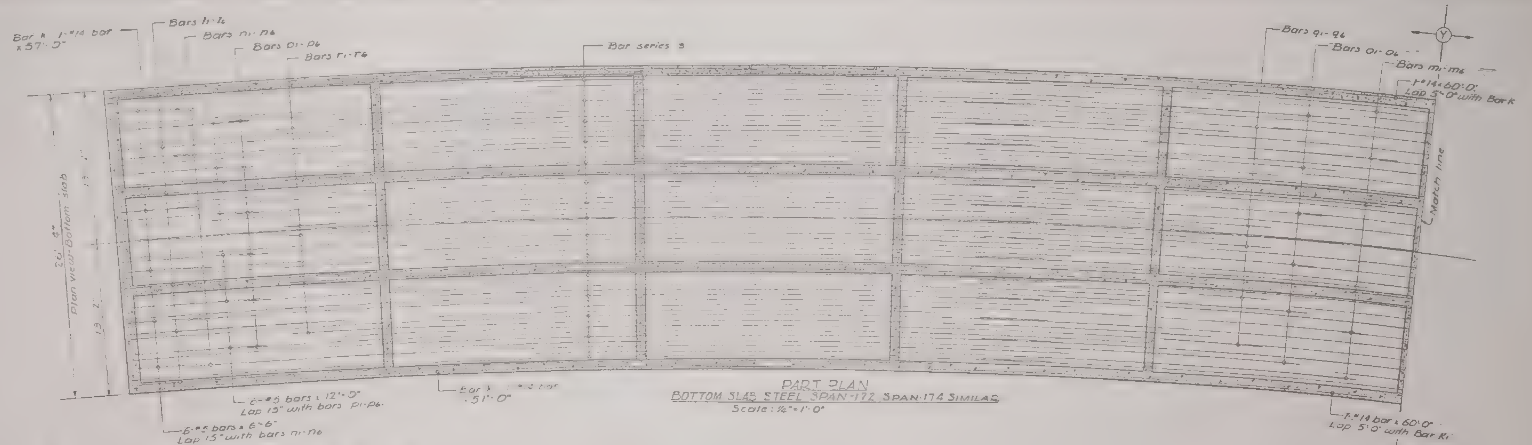
APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS SPAN 173 and 174

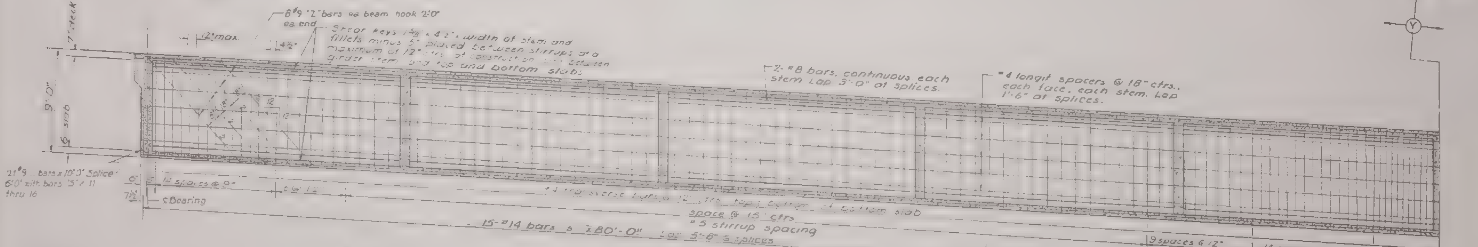
DATE FEB. 26, 1962
SHEET 51 OF 56
BRIDGE NO. 7949
DRAWING NO. 17651



PART PLAN

BOTTOM SLAB STEEL SPAN-172 SPAN-174 SIMILAR

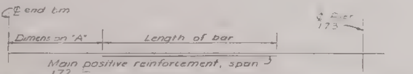
Scale: ½" = 1'-0"



7" deck
9'-0"
slab
12" max
4½"
8-#9 "Z" bars ea beam hook 2'-0" ea end
Shear keys 1½" x 4" x width of stem and fillets minus 5" placed between stirrups at a maximum of 12" ctrs. at construction joints between girder stem and top and bottom slabs
2-#8 bars continuous each stem Lap 3'-0" at splices.
#4 longit spacers @ 18" ctrs. each face, each stem. Lap 1'-6" at splices.
21-#9 bars x 10'-0" Splice 6'-0" with bars "S" 11 thru 16
14 spaces @ 9"
℄ Bearing
#5 transverse bars @ 12" ctrs top & bottom of bottom slab
space @ 15" ctrs
#5 stirrup spacing
15-#14 bars x ±80'-0" Lap 5'-8" @ splices
9 spaces @ 12"
14 spaces @ 9"
Y
℄ Pier 173
15-#14 bars x 69'-0". Lap 5'-8" with bars s.

PART LONGITUDINAL SECTION · SPAN 172

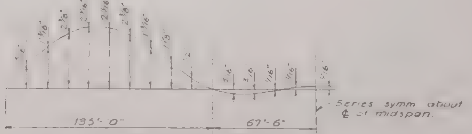
Scale: ⅛" = 1'-0"



Main positive reinforcement, span 172

BAR PLACEMENT

Bar	Size	Length	"A"	Bar	Size	Length	"A"	Bar	Size	Length	"A"
k	14	51'-0"	1'-0"	n2	14	79'-6"	5'-0"	p5	14	79'-0"	10'-0"
k1		51'-0"	1'-0"	n3		75'-6"	5'-0"	p6		78'-6"	10'-0"
l1		77'-6"	—	n4		77'-6"	5'-0"	q1		83'-0"	19'-6"
l2		7[illegible]'-6"	—	n5		77'-0"	5'-0"	q2		82'-0"	19'-0"
l3		7[illegible]'-6"	—	n6		76'-6"	5'-0"	q3		8[illegible]'-0"	19'-0"
l4		7[illegible]'-6"	—	o1		8[illegible]'-6"	27'-0"	q4		81'-0"	19'-0"
l5		74'-0"	—	o2		79'-6"	2[illegible]'-6"	q5		80'-6"	19'-0"
l6		7[illegible]'-6"	—	o3		78'-6"	2[illegible]'-0"	q6		80'-0"	18'-6"
m1		7[illegible]'-6"	37'-0"	o4		77'-6"	25'-0"	r1		[illegible]3'-0"	14'-0"
m2		74'-6"	37'-0"	o5		77'-0"	25'-6"	r2		82'-0"	14'-0"
m3		7[illegible]'-0"	3[illegible]'-6"	o6		76'-6"	25'-0"	r3		81'-0"	14'-0"
m4		7[illegible]'-6"	35'-6"	p1		82'-6"	[illegible]	r4		8[illegible]'-0"	14'-0"
m5		7[illegible]'-0"	35'-0"	p2		81'-6"	10'-0"	r5		80'-6"	14'-0"
m6		[illegible]'-6"	35'-0"	p3		80'-6"	10'-0"	r6	14	80'-0"	14'-0"
n1	14	[illegible]	5'-0"	p4	14	79'-6"	10'-0"				



Distances measured along ℄ roadway

DEAD LOAD CAMBER DIAGRAM

No Scale

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED:
Ivan D. Merchant
BRIDGE ENGINEER

DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

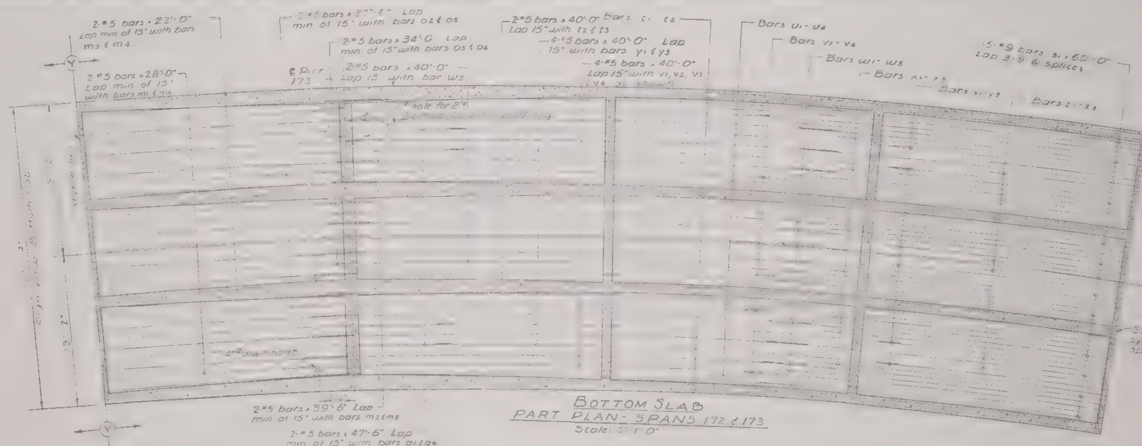
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS SPANS 172 and 174

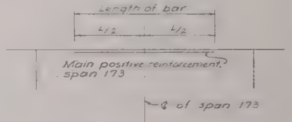
DATE FEB. 26, 1962
SHEET 52 OF 58
BRIDGE NO 7949
DRAWING NO. 17652

APR 2 1962

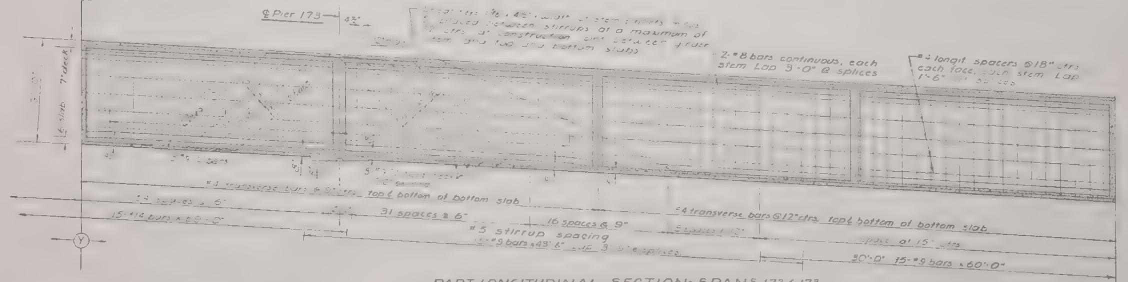

2-#5 bars x 22'-0" Lap min of 15" with bars m3 & m4
2-#5 bars x 28'-0" Lap min of 15" with bars m1 & m6
2-#5 bars x 33'-6" Lap min of 15" with bars o2 & o5
2-#5 bars x 34'-0 Lap min of 15" with bars o3 & o4
℄ Pier 173
2-#5 bars x 40'-0" Lap 15 with bar w3
2-#5 bars x 40'-0" Bars t1 - t4 Lap 15" with t2 & t3
4-#5 bars x 40'-0" Lap 15" with bars y1 & y3
4-#5 bars x 40'-0" Lap 15" with v1, v2, v3 & v4 as shown
hole for 2"
Bars u1 - u4
Bars v1 - v4
Bars w1 - w5
Bars x1 - x3
Bars y1 - y3
Bars z1 - z3
15-#9 bars x 60'-0" Lap 3'-9 @ splices
Steel arrangement symm about ℄ of span 173
3'-2"
2-#5 bars x 39'-6" Lap min of 15" with bars m2 & m5
2-#5 bars x 47'-6" Lap min of 15" with bars q1 & q6

BOTTOM SLAB
PART PLAN - SPANS 172 & 173

Scale: 3/8"=1'-0"

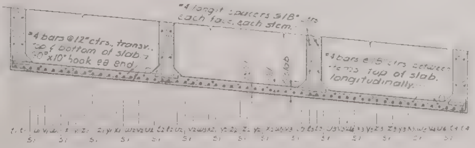


BAR PLACEMENT


℄ Pier 173
4½"
7'deck
6' slab
2-#8 bars continuous, each stem Lap 3'-0" @ splices
#4 longit spacers @18" ctrs each face, each stem Lap 1'-6" at splices
#4 transverse bars @ 9" ctrs top & bottom of bottom slab
31 spaces @ 6"
16 spaces @ 9"
#5 stirrup spacing
#4 transverse bars @12" ctrs top & bottom of bottom slab
spaces at 15" ctrs
15-#14 bars x 60'-0"
15-#9 bars x 48'-6" Lap 3'-9" @ splices
30'-0" 15-#9 bars x 60'-0"

PART LONGITUDINAL SECTION - SPANS 172 & 173

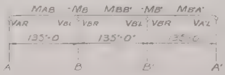
Scale 1/4"=1'-0"


#4 longit spacers @18" ctrs each face, each stem.
#4 bars @12" ctrs., transv., top & bottom of slab 30"x10" hook ea end.
#4 bars @ 15" ctrs between stems top of slab longitudinally.

BOTTOM SLAB SECTION - SPAN 173

Scale: 1/8"=1'-0"

Bar	Size	Length
t1	9	78'-0"
t2		76'-0"
t3		75'-0"
t4		73'-0"
u1		73'-6"
u2		72'-0"
u3		71'-0"
u4		69'-6"
v1		67'-0"
v2		66'-0"
v3		65'-0"
v4		64'-0"
w1		61'-0"
w2		60'-0"
w3		59'-0"
w4		55'-0"
w5		57'-0"
x1		52'-6"
x2		51'-6"
x3		50'-6"
y1		42'-0"
y2		41'-0"
y3		40'-6"
z1		26'-0"
z2		25'-0"
z3	9	24'-6"



DESIGN DATA

	MAB	MB	MBB'	VAR	VBL	VBR	RA	RB
D.L	15,978.3	-21,133.4	4,448.0	596.4	943.4	788.6	631.9	1,732.0
L.L.+I.	5,020.2	-5,207.1	4,159.7	192.6	222.1	222.1	192.6	390.3
Total	20,998.5	-26,340.5	8,607.7	789.0	1,165.5	1,010.7	824.5	2,122.3

Moments are in ft.-kips per entire cross section.
Shears & reactions are in kips per entire cross section.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG
FOR EXAMPLE
INDICATED SCALE ½"=1'-0" SHOULD BE READ ¼"=1'-0"
INDICATED SCALE 1"=10'-0" SHOULD BE READ 1"=20'-0"

DATE	REVISION

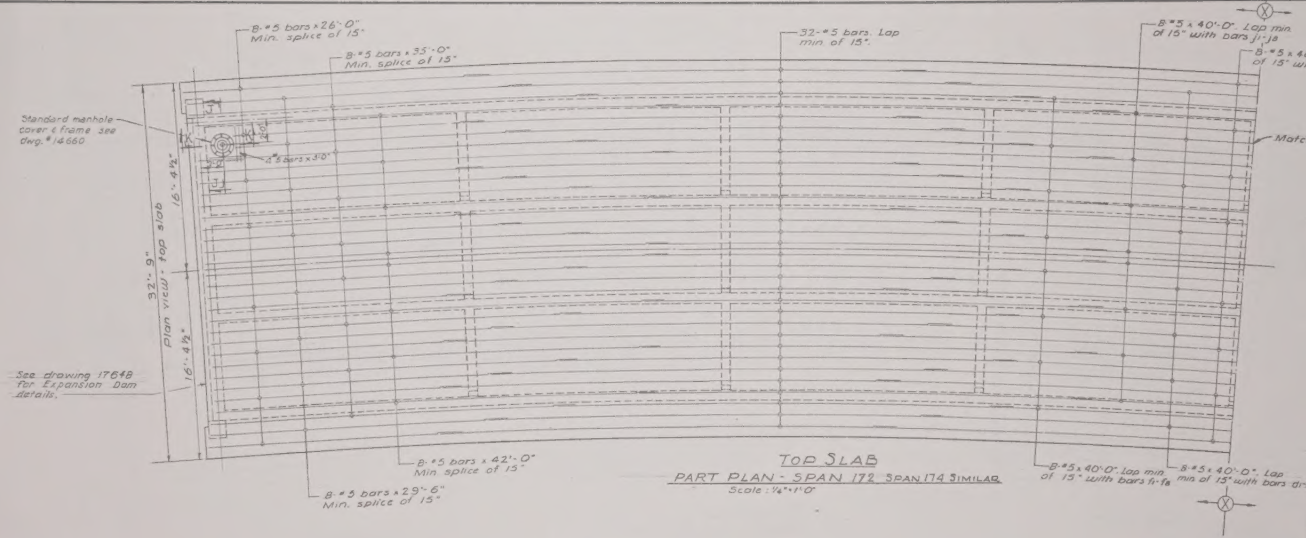
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS SPANS 172 and 173

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED MAC
DRAWN MAC
CHECKED
CALC BOOK 645
DATE FEB 26, 1962
SHEET 53 OF 58
BRIDGE NO 7949
DRAWING NO 17653

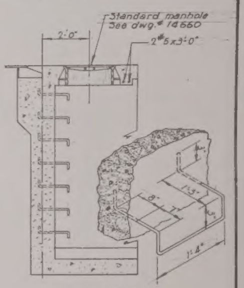
APR 2 1962


B-#5 bars x 26'-0" Min. splice of 15"
B-#5 bars x 35'-0" Min. splice of 15"
32-#5 bars. Lap min of 15".
B-#5 x 40'-0". Lap min. of 15" with bars j1-j8
B-#5 x 40'-0". Lap min. of 15" with bars b1-b8
Standard manhole cover & frame see dwg.# 14660
4-#5 bars x 3'-0"
Match line
32'-9" Plan view - top slab
16'-4½"
16'-4½"
See drawing 17648 for Expansion Dam details.
B-#5 bars x 42'-0" Min splice of 15"
B-#5 bars x 29'-6" Min. splice of 15"
B-#5 x 40'-0". Lap min of 15" with bars f1-f8
B-#5 x 40'-0". Lap min of 15" with bars d1-d8
X

TOP SLAB

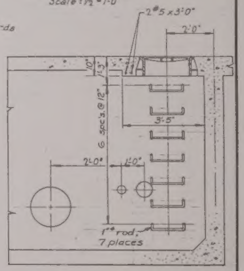
PART PLAN - SPAN 172 SPAN 174 SIMILAR

Scale: ¼" = 1'-0"



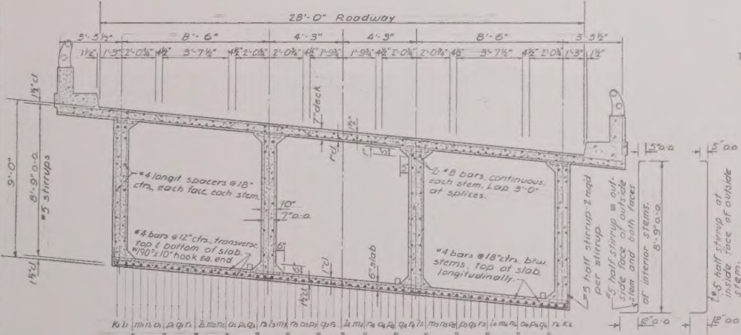
SECTION "KK"

Scale: 1½" = 1'-0"



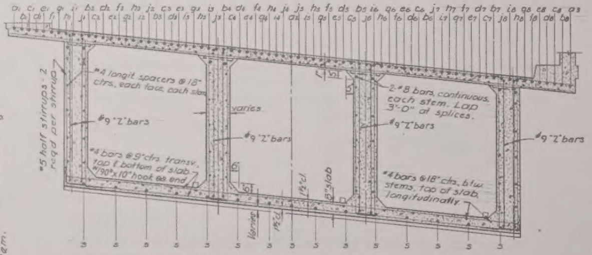
SECTION "JJ"

Scale: 1½" = 1'-0"


28'-0" Roadway
3'-3½"
8'-6"
4'-3"
4'-3"
8'-6"
3'-3½"
7" deck
9'-0"
8'-9" o.o.
#5 stirrups
#4 longit spacers @ 18" ctrs, each face, each stem.
2-#8 bars, continuous each stem. Lap 3'-0" at splices.
10"
7" o.o.
#4 bars @ 12" ctrs., transverse top & bottom of slab. w/90° x 10" hook ea. end
#4 bars @ 18" ctrs. btw. stems, top of slab longitudinally.
6" slab
#5 half stirrup - 2 reqd per stirrup.
#5 half stirrup @ outside face of outside stem and both faces of interior stems. 8'-9" o.o.
#5 half stirrup at inside face of outside stem.
5" o.o.
12" o.o.

ROADWAY SECTION - SPANS 172 & 174

Scale: ⅜" = 1'-0"


#5 half stirrups - 2 reqd per stirrup
#4 longit spacers @ 18" ctrs, each face, each stem
#9 "Z" bars
varies
#4 bars @ 9" ctrs. transv. top & bottom of slab. w/90° x 10" hook ea. end
2-#8 bars, continuous each stem. Lap 3'-0" at splices.
#4 bars @ 18" ctrs. btw stems, top of slab longitudinally.
5" slab

ROADWAY SECTION AT PIER 173 & 174

Scale: ⅜" = 1'-0"

Deck steel:
#5 bars @ 10" ctrs., straight, top & bottom, transverse.
#5 bars @ 10" ctrs., bent, transverse.
#5 spacer bars @ 12" ctrs., top of slab. Omit where replaced by negative bars.
#4 spacer bars @ 4½" & 12" ctrs., bottom of slab, as shown.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRW'G.
FOR EXAMPLE:
INDICATED SCALE ¾" = 1'-0" SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0" SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER

DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

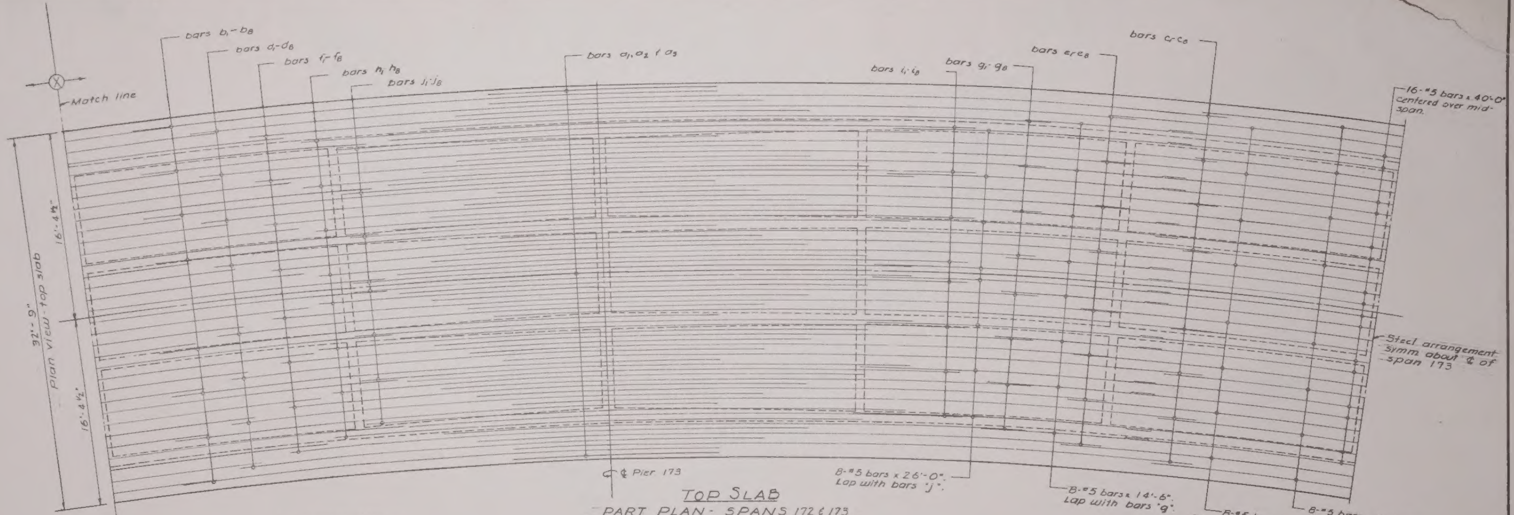
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

DETAILS SPANS 172 and 174

DATE FEB. 26, 1962
SHEET 54 OF 58
BRIDGE NO. 7949
DRAWING NO. 17654

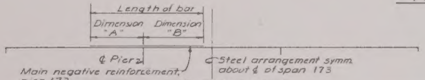
APR 2 1962
MAR 5 1962


bars b_1 - b_8
bars d_1 - d_8
bars f_1 - f_8
bars h_1 h_8
bars j_1 j_8
Match line
X
bars a_1, a_2 & a_3
bars i_1 i_8
bars g_1 g_8
bars e_1 e_8
bars c_1 c_8
16-#5 bars x 40'-0" centered over mid-span.
32'-9"
16'-4½"
16'-4½"
Plan view - top slab
Steel arrangement symm about ℄ of span 173
℄ Pier 173
8-#5 bars x 26'-0". Lap with bars "j".
8-#5 bars x 14'-6". Lap with bars "g".
8-#5 bars x 51'-0" ctrd. over midspan. Lap with "e" bars.
8-#5 bars x 35'-0". Lap with "c" bars. Center bars about midspan.

TOP SLAB

PART PLAN - SPANS 172 & 173

Scale: ¼" = 1'-0"

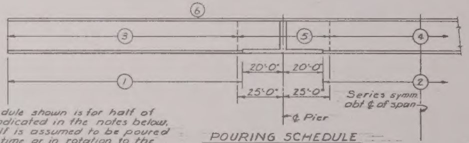

Length of bar
Dimension "A"
Dimension "B"
℄ Pier
Main negative reinforcement, pier 173
Steel arrangement symm about ℄ of span 173

BAR PLACEMENT

Bar	Size	Length	"A"	"B"
a_1	14	20'-0"	9'-6"	10'-6"
a_2		19'-0"	9'-0"	10'-0"
a_3		18'-0"	8'-6"	9'-6"
b_1		51'-0"	40'-6"	10'-6"
b_2		50'-6"	40'-0"	10'-6"
b_3		50'-0"	40'-0"	10'-0"
b_4		49'-0"	39'-0"	10'-0"
b_5		49'-0"	39'-0"	10'-0"
b_6		48'-0"	38'-0"	10'-0"
b_7		47'-6"	38'-0"	9'-6"
b_8		47'-0"	37'-6"	9'-6"
c_1		64'-6"	9'-6"	55'-0"
c_2		64'-0"	9'-6"	54'-6"
c_3		63'-0"	9'-0"	54'-0"
c_4		62'-0"	9'-0"	53'-0"
c_5		62'-0"	9'-0"	53'-0"
c_6		61'-0"	9'-0"	52'-0"
c_7		60'-0"	8'-6"	51'-6"
c_8		59'-6"	8'-6"	51'-0"
d_1		50'-0"	35'-6"	14'-6"
d_2		49'-6"	35'-0"	14'-6"
d_3		49'-0"	35'-0"	14'-0"
d_4		48'-0"	34'-0"	14'-0"
d_5		48'-0"	34'-0"	14'-0"
d_6		47'-0"	33'-0"	14'-0"
d_7		46'-6"	33'-0"	13'-6"
d_8		46'-0"	32'-6"	13'-6"
e_1		59'-6"	12'-6"	47'-0"
e_2	14	59'-0"	12'-6"	46'-6"

Bar	Size	Length	"A"	"B"
e_3	14	58'-0"	12'-0"	46'-0"
e_4		57'-0"	12'-0"	45'-0"
e_5		57'-0"	12'-0"	45'-0"
e_6		56'-0"	12'-0"	44'-0"
e_7		55'-0"	11'-6"	43'-6"
e_8		54'-6"	11'-6"	43'-0"
f_1		48'-6"	30'-0"	18'-6"
f_2		48'-6"	30'-0"	18'-6"
f_3		47'-6"	29'-6"	18'-0"
f_4		47'-0"	29'-0"	18'-0"
f_5		47'-0"	29'-0"	18'-0"
f_6		46'-6"	28'-6"	18'-0"
f_7		45'-6"	28'-0"	17'-6"
f_8		45'-6"	28'-0"	17'-6"
g_1		55'-0"	15'-6"	39'-6"
g_2		54'-6"	15'-6"	39'-0"
g_3		53'-6"	15'-0"	38'-6"
g_4		53'-0"	15'-0"	38'-0"
g_5		53'-0"	15'-0"	38'-0"
g_6		52'-6"	15'-0"	37'-6"
g_7		51'-6"	14'-6"	37'-0"
g_8		51'-0"	14'-6"	36'-6"
h_1		50'-0"	26'-0"	24'-0"
h_2		49'-6"	26'-0"	23'-6"
h_3		48'-0"	25'-0"	23'-0"
h_4		48'-0"	25'-0"	23'-0"
h_5		48'-0"	25'-0"	23'-0"
h_6		48'-0"	25'-0"	23'-0"
h_7	14	46'-6"	24'-0"	22'-6"

Bar	Size	Length	"A"	"B"
h_8	14	46'-0"	24'-0"	22'-0"
i_1		51'-6"	18'-6"	33'-0"
i_2		51'-6"	18'-6"	33'-0"
i_3		50'-6"	18'-0"	32'-6"
i_4		50'-0"	18'-0"	32'-0"
i_5		50'-0"	18'-0"	32'-0"
i_6		49'-6"	18'-0"	31'-6"
i_7		48'-6"	17'-6"	31'-0"
i_8		48'-6"	17'-6"	31'-0"
j_1		51'-0"	23'-0"	28'-0"
j_2		50'-0"	22'-6"	27'-6"
j_3		49'-0"	22'-0"	27'-0"
j_4		49'-0"	22'-0"	27'-0"
j_5		49'-0"	22'-0"	27'-0"
j_6		49'-0"	22'-0"	27'-0"
j_7		48'-0"	21'-6"	26'-6"
j_8	14	47'-0"	21'-0"	26'-0"



POURING SCHEDULE

Note:
Pouring schedule shown is for half of series. As indicated in the notes below, the other half is assumed to be poured at the same time or in rotation to the pours shown.

1. Pour first 115 ft of bottom slab of girder in end spans.
2. Pour center 95 ft. of bottom slab of girder in midspan.
3. Pour webs to deck, including diaphragms and end cross-beams, for first 110 ft of end spans.
4. Pour webs to deck, including diaphragms, for center 85 ft. of midspan.

Ⓐ Delay pours no. 3 & 4 at a point just below the web fillets a sufficient time to allow for shrinkage.

5. Pour 40 ft. section of bottom slab and 50 ft. section of web over pier to deck including pier cross-beam and diaphragms. Delay pour as indicated in note "A".
6. Pour top fillet & deck slab. Section 6 pour may be broken at any diaphragm beam.

NOTE
THE SCALE OF THIS PRINT IS ½ THAT OF THE ORIGINAL DRWG.
FOR EXAMPLE:
INDICATED SCALE ¾" = 1'-0"
SHOULD BE READ ⅜" = 1'-0"
INDICATED SCALE 1" = 10'-0"
SHOULD BE READ 1" = 20'-0"

DATE	REVISION

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED MAC
DRAWN MAC
CHECKED
CALC. BOOK 645

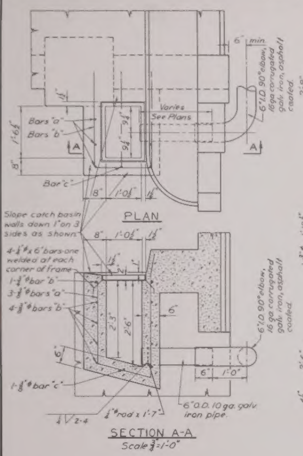
OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

COLUMBIA RIVER BRIDGE
ASTORIA, OREGON PT. ELLICE, WASH.
PIER CONTRACT

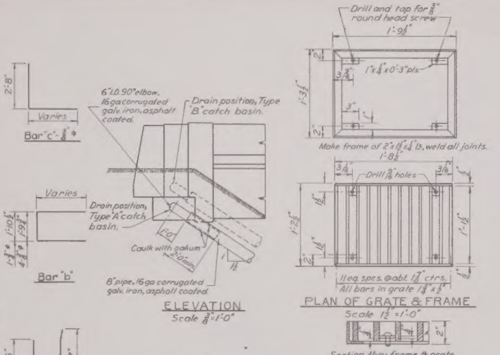
DETAILS SPANS 172 and 173

DATE FEB. 26, 1962
SHEET 55 OF 58
BRIDGE NO. 7949
DRAWING NO. 17655

APR 2 1962
MAR 5 1962


6" min.
6" I.D. 90° elbow, 16 ga corrugated galv. iron, asphalt coated.
Varies See Plans
Bars "a"
Bars "b"
Bar "c"
A
PLAN
Slope catch basin walls down 1" on 3 sides as shown.
4-½"φ x 6" bars-one welded at each corner of frame
1-⅜"φ bar "b"
3-⅜"φ bars "a"
4-⅜"φ bars "b"
1-⅜"φ bar "c"
¼"φ rod x 1'-7"
6" O.D. 10 ga. galv. iron pipe.
SECTION A-A
Scale ⅜"=1'-0"

TYPE A CATCH BASIN


Bar "c" - ⅜"φ
Varies
Bar "b"
Bar "a" - ⅜"φ
6" I.D. 90° elbow, 16 ga corrugated galv. iron, asphalt coated.
Drain position, Type "B" catch basin.
Drain position, Type "A" catch basin.
Caulk with oakum
8" pipe, 16 ga corrugated galv. iron, asphalt coated.
ELEVATION
Scale ⅜"=1'-0"
Drill and tap for ⅜" round head screw
1'-9⅝"
1" x ⅛" x 0'-3" pls.
Make frame of 2" x 1½" x ¼" Ls, weld all joints.
1'-8½"
Drill 9/16" holes
11 eq. spcs. @ abt. 1½" ctrs.
All bars in grate 1⅜" x ⅜"
PLAN OF GRATE & FRAME
Scale 1½"=1'-0"

Section thru frame & grate showing screw in place.
Galvanize after welding

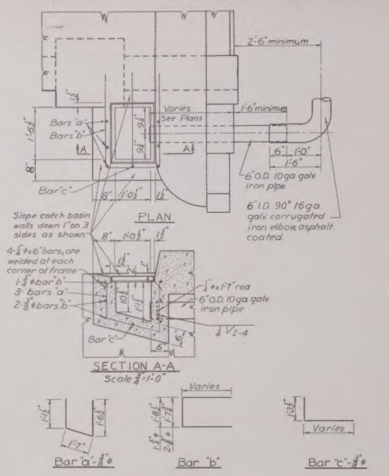
Scale 3"=1'-0"

Weight of bars and angles for one catch basin = 71 lbs

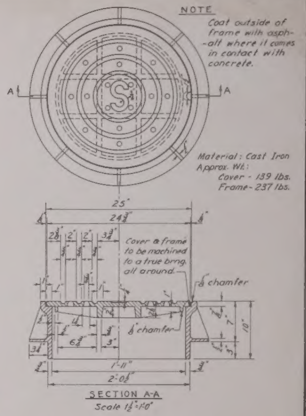
Weight of reinforcing steel for 1 Type "A" catch basin = 35 lbs. (approx).

Weight of reinforcing steel for 1 Type "B" catch basin = 25 lbs. (approx).

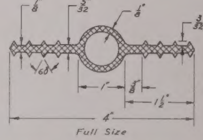
STANDARD CATCH BASIN DETAILS


2'-6" minimum
1'-6" minimum
Varies See Plans
Bars "a"
Bars "b"
Bar "c"
PLAN
6" O.D. 10 ga galv. iron pipe
6" I.D. 90° 16 ga galv. corrugated iron elbow, asphalt coated.
Slope catch basin walls down 1" on 3 sides as shown.
4-½"φ x 6" bars, one welded at each corner of frame
1-⅜"φ bar "b"
3-bars "a"
2-⅜"φ bars "b"
¼"φ x 1'-7" rod
6" O.D. 10 ga. galv. iron pipe
SECTION A-A
Scale ⅜"=1'-0"
Bar "a" - ⅜"φ
Bar "b"
Bar "c" - ⅜"φ
Varies

TYPE B CATCH BASIN


NOTE
Coat outside of frame with asphalt where it comes in contact with concrete.
Material: Cast Iron
Approx. Wt.:
Cover - 139 lbs.
Frame - 237 lbs.
25"
24⅜"
Cover & frame to be machined to a true brng. all around.
⅛" chamfer
SECTION A-A
Scale 1½"=1'-0"

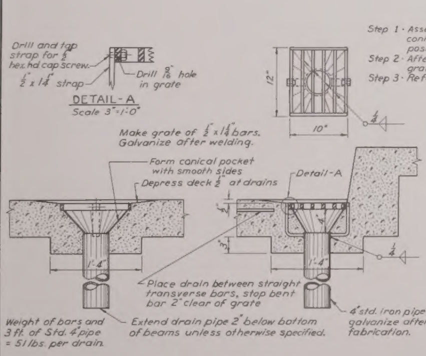
STANDARD MANHOLE COVER AND FRAME



Full Size

WATERSTOP DETAIL

To be used where shown on plans. See Special Provisions for material specifications.


Drill and tap strap for ½" hex. hd. cap screw.
½" x 1¼" strap
Drill 9/16" hole in grate
DETAIL - A
Scale 3"=1'-0"
12"
10"
Form conical pocket with smooth sides
Depress deck ½" at drains
Detail - A
1'-4"
Place drain between straight transverse bars, stop bent bar 2" clear of grate
Extend drain pipe 2" below bottom of beams unless otherwise specified.
4" std. iron pipe, galvanize after fabrication.

Make grate of ½" x 1¼" bars. Galvanize after welding.

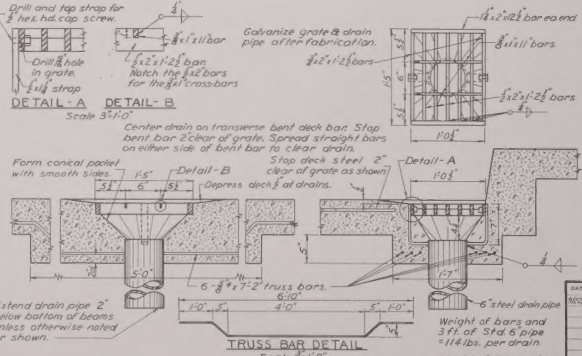
Step 1 - Assemble grate and drain pipe with conical form in place and place in position.
Step 2 - After concrete has set unscrew grate and remove conical form.
Step 3 - Refasten grate.

Weight of bars and 3 ft. of Std. 4" pipe = 51 lbs. per drain.

Scale 1½"=1'-0"

TYPE A DRAIN

STANDARD DRAIN DETAILS


Drill and tap strap for ½" hex. hd. cap screw.
Drill 9/16" hole in grate.
½" x 1¼" strap
⅜" x 1" x 11" bar
½" x 2" x 1'-2½" bar.
Notch the ½" x 2" bars for the ⅜" x 1" cross-bars
DETAIL - A DETAIL - B
Scale 3"=1'-0"
1½" x 2" x 12½" bar ea. end
⅜" x 1" x 11" bars.
½" x 2" x 1'-2½" bars
1'-0½"
Form conical pocket with smooth sides.
Detail - B
Depress deck ½" at drains.
Stop deck steel 2" clear of grate as shown
Detail - A
6 - ⅝"φ x 7'-2" truss bars.
6'-10"
4'-0"
TRUSS BAR DETAIL
Scale ⅜"=1'-0"
6" steel drain pipe

Galvanize grate & drain pipe after fabrication.

Center drain on transverse bent deck bar. Stop bent bar 2" clear of grate. Spread straight bars on either side of bent bar to clear drain.

Extend drain pipe 2" below bottom of beams unless otherwise noted or shown.

Weight of bars and 3 ft. of Std. 6" pipe = 114 lbs. per drain.

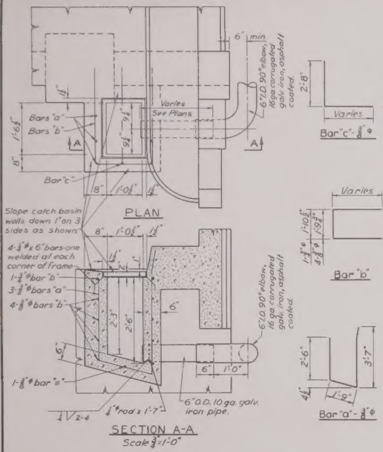
Weight of 6 truss bars = 46 lbs. per drain.

TYPE B DRAIN

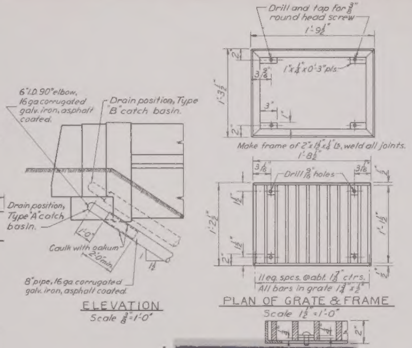
DATE	REVISION
9/22/59	Added Waterstop

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN J.B.L.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
STANDARD
DRAINS WATERSTOP
CATCH BASINS
MANHOLE COVER & FRAME
GENERAL DETAILS
DATE 10-29-58
SHEET OF
BRIDGE NO
DRAWING NO 14660



TYPE A CATCH BASIN

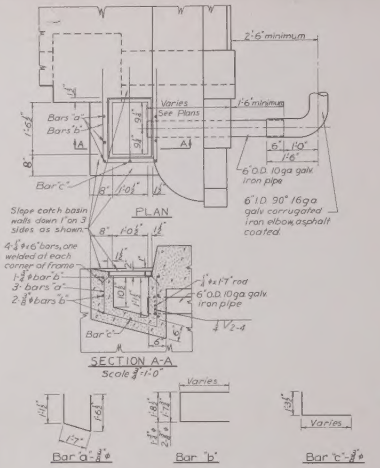

6" I.D. 90° elbow, 16 ga. corrugated galv. iron, asphalt coated.
Drain position, Type "B" catch basin.
Drain position, Type "A" catch basin.
Caulk with oakum
8" pipe, 16 ga. corrugated galv. iron, asphalt coated.
ELEVATION
Scale ⅜"=1'-0"
Drill and tap for ⅜" round head screw
1'-9½"
1"x¼"x0'-3" pls.
Make frame of 2"x1½"x¼" Ls, weld all joints.
1'-8½"
Drill ⁹⁄₁₆" holes
11 eq. spcs. @ abt. 1½" ctrs.
All bars in grate 1½" x ½"
PLAN OF GRATE & FRAME
Scale 1½"=1'-0"
2"

Weight of bars and
for one catch basin=

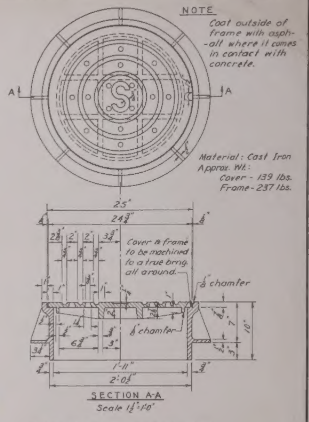
Weight of reinforcing
for 1 Type "A" catch basin

Weight of reinforcing
for 1 Type "B" catch basin

STANDARD CA LS


2'-6" minimum
1'-6" minimum
Varies
See Plans
Bars "a"
Bars "b"
Bar "c"
6" O.D. 10 ga. galv. iron pipe
6" I.D. 90° 16 ga. galv. corrugated iron elbow, asphalt coated.
PLAN
Slope catch basin walls down 1" on 3 sides as shown.
4-½"φ x 6" bars, one welded at each corner of frame
1-⅜"φ bar "b"
3-bars "a"
2-⅜"φ bars "b"
¼"φ x 1'-7" rod
6" O.D. 10 ga. galv. iron pipe
¼ V 2-4
SECTION A-A
Scale ⅜"=1'-0"
1'-7"
Bar "a" - ⅜"φ
Varies
Bar "b"
Varies
Bar "c" - ⅜"φ

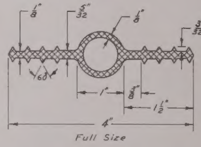
TYPE B CATCH BASIN



NOTE
Coat outside of frame with asphalt where it comes in contact with concrete.

Material: Cast Iron
Approx. Wt.:
Cover - 139 lbs.
Frame - 237 lbs.

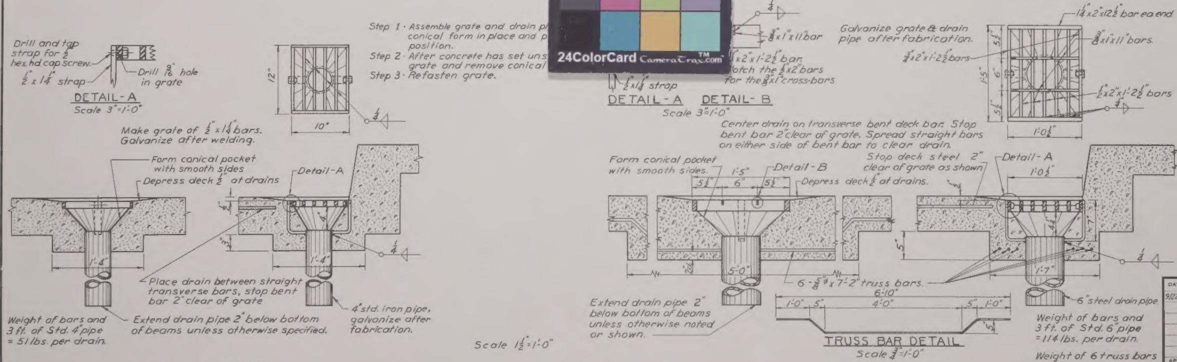
STANDARD MANHOLE COVER AND FRAME



WATERSTOP DETAIL

To be used where shown on plans. See Special Provisions for material specifications.

Step 1 · Assemble grate and drain p
conical form in place and p
position.
Step 2 · After concrete has set uns
grate and remove conical
Step 3 · Refasten grate.


Drill and tap strap for ½" hex. hd. cap screw.
Drill ⁹⁄₁₆" hole in grate
½" x 1¼" strap
DETAIL-A
Scale 3"=1'-0"
12"
10"
Make grate of ½" x 1¼" bars. Galvanize after welding.
Form conical pocket with smooth sides
Depress deck ½" at drains
Detail-A
1'-4"
Place drain between straight transverse bars, stop bent bar 2" clear of grate
Extend drain pipe 2" below bottom of beams unless otherwise specified.
4" std. iron pipe, galvanize after fabrication.
Weight of bars and 3 ft. of Std. 4" pipe = 51 lbs. per drain.
TYPE A DRAIN
Scale 1½"=1'-0"
⅜"x1"x11" bar
½"x2"x1'-2½" bar.
Notch the ½"x2" bars for the ⅜"x1" cross-bars
½"x1¼" strap
DETAIL-A DETAIL-B
Scale 3"=1'-0"
Galvanize grate & drain pipe after fabrication.
1¼"x2"x12½" bar ea. end
⅜"x1"x11" bars.
½"x2"x1'-2½" bars
1'-0½"
Center drain on transverse bent deck bar. Stop bent bar 2" clear of grate. Spread straight bars on either side of bent bar to clear drain.
Form conical pocket with smooth sides.
1'-5"
5½"
6"
5½"
Detail-B
Depress deck ½" at drains.
Stop deck steel 2" clear of grate as shown
Detail-A
1'-0½"
5'-0"
6-⅜"φ x 7'-2" truss bars.
6'-10"
4'-0"
Extend drain pipe 2" below bottom of beams unless otherwise noted or shown.
TRUSS BAR DETAIL
Scale ⅜"=1'-0"
6" steel drain pipe
Weight of bars and 3 ft. of Std. 6" pipe = 114 lbs. per drain.
Weight of 6 truss bars = 46 lbs. per drain.
TYPE B DRAIN

STANDARD DRAIN DETAILS

DATE	REVISION
9/22/59	Added Waterstop

APPROVED: Ivan D. Merchant
BRIDGE ENGINEER
DESIGNED
CHECKED
DRAWN J.B.L.
CALC. BOOK

OREGON STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
STANDARD
DRAINS WATERSTOP
CATCH BASINS
MANHOLE COVER & FRAME
GENERAL DETAILS
DATE 10-29-58
SHEET OF
BRIDGE NO
DRAWING NO. 14660

89.166.1